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THE NAVY'S CARGO
TRANSPORTATION SYSTEM

by

Donald T. McBurney

December 1986

Thesis Advisor Dan C. Boger

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The Navy's Cargo Transportation System

by

Donald T. McBurney
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B.S., University of Idaho, 1976

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requirements for the degree of

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ABSTRACT

The purpose of this thesis is to determine if the Navy is receiving sufficient services to support the cost and manner in which the QUICKTRANS contract is managed. It reviews the current contract and analyzes its efficiency. Additionally, it reviews a proposed revision to the established manner of contracting transportation services, which was presented in 1983. Finally, it reviews potential future improvements to QUICKTRANS and the entire Navy Integrated Transportation System.

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I. INTRODUCTION

A. GENERAL

Timely transportation of high priority cargo is essential in maintaining minimum downtime for vital weapons systems and platforms. As the size, technology, and global responsibility of the United States Navy have increased, the reliable flow of high priority cargo from the sources of supply to the end user has become critical.

Transportation is currently being provided by the commercial sector, but in a segmented style. It is not an integrated service, such as the service Federal Express provides to a commercial company in moving cargo from an origin to a destination, including in-transit tracking capability. The Navy uses a combination of surface carriers (land-haul), an air carrier, and a ground terminal company, with an in-house tracking and coordination capability.

The Navy has initiated numerous innovative transportation programs to improve the service required to support its various customers during the past ten years. This has resulted in more cost effective use of the civilian sector in transporting cargo. However, there is a lack of coordinated management of the various cargo transportation systems.

B. PURPOSE

The purpose of this thesis is to determine if the costs of the Navy's transportation cargo system and its management are providing the most effective cargo transportation possible. Specifically, the following primary research questions are proposed:

1) What is the Navy currently getting for it's money and what effect will future changes in environment and technology have on the transportation system?

2) How do the actual administrative and operational costs of the Navy's cargo transportation system compare to a proposed commercial alternative in FY1982?

The following secondary questions are considered pertinent in addressing the above research questions:

1) Can a single commercial source provide the same services currently being provided by numerous contractors and other Navy transportation subsytems?

2) What were the actual costs for the administration and operation of the Navy's cargo transportation system during FY1982?

3) What services do the QUICKTRANS contracts provide?

4) How have the military and commercial transportation systems developed and evolved?

C. THESIS APPROACH

1. Scope

This thesis is comprised of four related areas of discussion that address the above stated purpose and questions. First, a review of the history surrounding the evolution of the Navy's cargo transportation system is conducted in order to establish a basis for understanding the present system. This involves a brief look at the Navy Material Transportation Office (NAVMTO), Military Airlift Command (MAC), and the commercial air freight industry.

Second, a summary of the Navy's ground terminal and airlift service contract is provided (specific contract details are listed). This summary provides the basis for an analysis of QUICKTRANS effectiveness. A list of criterion developed by a civilian contractor is used to assist in this analysis.

Third, the costs comparison of the QUICKTRANS system as it existed in FY1982 are compared to a proposed commercial system in the same year. This comparison identifies how much the Navy paid to administer and operate the ground terminal and airlift service contractor in FY1982. It includes a determination of how many military and civilian Department of Defense (DOD) personnel were required to supervise and operate the system; what DOD assets were needed to keep the system running smoothly; and what were the associated costs generated by the Navy's cargo transportation system. Once this cost figure is obtained, it is compared to the previously estimated cost for a contractor to accomplish an equivalent service. In part, this thesis is intended to critique the proposed commercial alternative.

In 1983, a thesis was written providing an estimated cost for a commercial activity to provide both the physical assets to move cargo and the ability to track it as one integrated service. When comparing the actual costs of the Navy's cargo transportation system in FY1982 to a proposed commercial system, this analysis made use of the data acquired from that previous thesis. These data are taken at face value with minimal verification undertaken.

Finally, potential improvements to the Navy's cargo transportation system are presented. Changes are categorized as either environmental or technological. Environmental changes reflect new or expanded missions. Technological changes involve changes in hardware and how it is used.

2. **Methodology**

Information and data for this thesis were gathered through several methods. Accumulated data concerning costs and material movement related to the Navy's freight system were obtained from financial and other reports generated by NAVMTO. A comprehensive review of literature and contracts, and the use of telephone and personal interviews with government and civilian transportation specialists were also conducted. Finally, background information was acquired through the Naval Postgraduate School Library, Defense Logistics Studies Information Exchange, Department of Defense and Department of Navy instructions and regulations, and Defense Technical Information Center. Also, throughout this study it will be assumed that the reader is generally familiar with standard DOD terminology and DOD policy and procedures for the transportation of military cargo.

3. **Organization**

This thesis is divided into seven chapters: an introduction, five research chapters, and a final summary chapter, which includes conclusions and recommendations. Chapter II provides a historical overview of the evolution and development of the Navy's cargo transportation system and the commercial air freight and trucking industry. Chapter III summarizes the ground terminal and airlift services contract. Chapter IV analyzes the effectiveness of the QUICKTRANS system. Chapter V compares the actual administrative and operational costs of the Navy's cargo transportation system to a proposed commercial alternative in FY1982. Chapter VI considers future developments affecting the transportation system. Chapter VII summarizes the analysis and provides conclusions and recommendations.

II. HISTORICAL BACKGROUND

Logistic support is the key to any military organization's success, especially in wartime but also in peacetime. It involves moving men and material quickly and efficiently to meet operational requirements, whether those requirements are for routine training, forward deployment units, military exercises, or war. This chapter reviews the development of the commercial air freight industry and to a lesser extent the commercial trucking industry. Additionally, a review is conducted of how the Navy's cargo transportation system has evolved.

A. U.S. DOMESTIC AIR FREIGHT INDUSTRY

In the beginning years of the airline industry, the United States government intervened to assist fledgling airline companies with a subsidy in the form of guaranteed movement of mail. In 1940, the demand for freight service caused United Air Lines to institute an all freight service between New York and Chicago. [Ref. 1: p. 1]

As a result of World War II, the air freight industry grew enormously. In the three year period from 1942 to 1945, more commercial freight was moved than had been moved in all the years prior combined. World War II created the impetus for former servicemen to buy surplus military aircraft and act as supplemental carriers under Section 292.5 of the economic regulations of the Civil Aeronautics Board (CAB). [Ref. 1: p. 5]

CAB approved these new supplemental carriers' applications (for certificates of public convenience and necessity) to offer scheduled air freight service, over the severe objections of the established dual service airlines, such as United Airlines. These older airlines feared that their operating profits would be critically affected and that they would have to cut back operations. However, in January 1947 there were fourteen new non-certified all freight carriers operating in the United States. Twelve months later only six of the original fourteen remained solvent. [Ref. 1: p. 5]

The trend was obvious. In July 1948, CAB issued experimental five-year certificates for scheduled all freight operation to four carriers, and simultaneously attempted to prevent further uneconomic rate war pricing by establishing minimum rates [Ref. 1: p. 2]. Again, the old guard lobbied against such action using the

justification that there was excess capacity in the preceding years from 1945 to 1948. On the other hand, the all cargo carriers argued by pointing out the benefits of being specialists and the potential savings to be gained by the developing consumer users.

During the same period, CAB established a sub-industry called air freight forwarders who, forty years later, would become extremely large and influential in air freight movement. The air freight forwarders have caused many of the improvements to the shipping industry, as a result of intense competition for cargo. One of those initiatives, bar coding for cargo shipping and tracking, is just becoming used today in increasing the throughput speed at cargo terminals. At the time, CAB's purpose was to bridge the gap between air express and air freight service. The potential of day-to-day service was in the shipment of regular large freight movements instead of emergency type shipments. These new air freight forwarders were patterned after the already successful railway freight forwarders.[1]

In the next ten years, the entire air industry grew and by 1961 CAB removed the minimum rates established in 1948 and subsequently increased in 1957. CAB had found its regulation of the industry to be appropriate. It concluded that the shipping public benefitted, that development of air freight was stimulated at no cost to the government, that it provided efficient ground-handling services, and that advertising for air freight was beneficial [Ref. 2: p. 18]. The conditional certificates that were issued in 1948 were replaced with indefinite certificates.

As the industry grew, CAB continued a laissez-faire policy toward the entry of freight forwarders in the domestic market. The first integration of the transportation industry occurred with railroads being authorized to own and operate air freight forwarders. Prior to the 1950's, the fear of vertical integration of the transportation industry prevented any crossover. Competition was fostered by CAB during the 1950's to a certain degree. It approved joint loading among forwarders, causing carriers to lower their rates because of "bulk" discounts. Forwarders were allowed to directly charter aircraft, and CAB did not impose minimum rates on them. [Ref. 2: p. 19]

Entry of motor carriers into the air freight forwarding industry was allowed by CAB in the 1960's. It was hoped that this would create a broader demand base by stimulating intermodal carriage of freight by air and truck. Initially, entry was requested by motor carriers handling household goods.

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[1]In the early 1900's, the United States railway industry permitted freight forwarders to consolidate shipments between New York and Chicago in order to save money [Ref. 3].

The 1970's presented a turbulent time for the aircraft industry. CAB initiated its Domestic Air Freight Investigation (DAFRI) in 1970 as a result of continuing complaints from the all cargo carriers about pricing policies of combination carriers. The issues included rate level, rate structure, and tariff rules. Seven years later CAB issued a decision saying that air freight rates should be cost based for each class of traffic. Those who did not base their rates on cost were in violation of the law. It was believed that air freight rates had been artificially suppressed and the quality of service was poor due to the overregulation. [Ref. 1: p. 6]

A comprehensive review of CAB's policies and practices was initiated by Senator Edward M. Kennedy in 1974. This review was the first substantial step in the deregulation of the aircraft industry. There was much controversy involved with these hearings, but their tentative finding was that there was too much regulation of the industry. An example of overregulation was Federal Express's prohibition from operating large aircraft due to CAB's regulations on commuter air carriers. Tiger Airlines had been prevented from expanding its domestic routes since the mid 1960's. Tiger believed it would create improved service by allowing the formation of multimodal corporations delivering freight door-to-door using surface transportation. In comparison, QUICKTRANS was moving cargo station-to-station with the users being responsible for pickup and delivery.

Deregulation for the passenger airlines meant potential savings to customers with less service. In contrast, deregulation in the air cargo part of the industry meant increased prices for users but significantly improved service. Additionally, it has meant the blurring of distinctions among the various types of operators, such as scheduled carriers, forwarders, and express-package operators [Ref. 3: p. 36]. Innovation in the area of service and the manner in which charges for those services were determined was expected to greatly benefit shippers, carriers, and the public in general. Consequently, on 9 November 1977, the first phase of airline deregulation occurred in the established all cargo portion of the industry.[2]

The proponents of deregulation were vindicated as scheduled air freight service to many additional cities occurred, and the service options increased dramatically cutting across all types of companies. Eventually, air carriers, air freight forwarders, courier services, small commuter airlines, and nonscheduled airlines took advantage of

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[2]Public Law 95-163 opened competition in the domestic market by eliminating CAB's control over all cargo market entry and exit, and sharply curtailed its jurisdiction of air freight rates [Ref. 1].

deregulation by expanding into each others' areas. When the Motor Carrier Act of 1980 was passed, it allowed CAB to amend its regulations concerning surface transport of continuous movement of freight beyond a previously specified 35 mile radius around an airport [Ref. 3: p. 36]. This freed various shipping companies to provide even better service. As expected, costs to the shipper have increased, but well within the bounds of reasonableness as ensured by free competition. Although reasonableness is subjective, the increased demand in the marketplace strongly indicates that the service is required at the new higher price.

The overnight express delivery operators have significantly increased in numbers. With size limitations removed and their access to larger and more efficient aircraft improved, business exploded. This area has been aggressively sought after by not only small new companies, but also by the large well established companies such as Burlington Northern Air Freight (BNAFI), Federal Express, Emery Air Freight, CF Air Freight, and even the United States Postal Service. Here, again, the positive benefit of deregulation is seen.

The continued competition in the air freight industry is fueled by the increasing market size and the potential for even more profits. Freight forwarders continue to grow and in many cases become their own airline, such as BNAFI and Emery. Service will continue to improve because each company will provide differentiated and better services to retain old customers and obtain new ones. Overall, it appears to be a shipper's market, and one that benefits the public in general and possibly the Navy in particular.

B. COMMERCIAL TRUCKING INDUSTRY

The trucking industry became a viable and very competitive alternative to the railroads during the 1920's. As the highway system both expanded and improved in quality, for-hire trucking became increasingly important. At the time, the Interstate Commerce Commission (ICC) had no regulatory authority over interstate highway carriage. This changed when the Motor Carrier Act of 1935 was passed. There were numerous laws passed subsequently, including the Transportation Act of 1940 which sought to strengthen and stabilize several modes of transportation, while restricting the intensity of intermodal competition [Ref. 4: pp. 241-242]. Another piece of early legislation restricted the capabilities of freight forwarders to own and operate their own equipment. It was called the Freight Forwarder Act of 1942. These various laws

prevented many abuses in pricing and service, as well as limiting new initiatives such as integrated shipping.

Although there have been modifications to the basic laws established in the thirties and forties, it was not until the deregulation initiatives of the late seventies and early eighties that it became possible for freight forwarders to control their own assets in an intermodal environment. The Motor Carrier Act of 1980, combined with the airline deregulation, has allowed companies such as Emery Air Freight to own a fleet of airplanes, and the trucking capability to transport cargo door-to-door.

C. QUICKTRANS

When World War II ended, the Naval Air Transport Service (NATS) had 431 aircraft and 26,134 officers and enlisted personnel [Ref. 5: p. 19]. Shortly thereafter, demobilization, the Key West Agreement, and, legislatively, the National Security Act of 1947 (and amendments to it in 1949) resulted in a realignment of functions among the services leaving the Navy with a minimum air cargo service. NATS was merged with the Air Transport Command (the successor to the Army Air Corps Command) to become the Military Air Transport Service (MATS) of the Air Force. This caused the consolidation of two logistic air functions, eliminating duplication of effort [Ref. 6: pp. 19-20]. One of the Air Force's primary missions thereafter was to provide air transportation for all the Armed Forces. MATS's specific objective was to satisfy each service's airlift requirements. The impracticality of this major objective became obvious when the resupply crisis, caused by the outbreak of the Korean War, drew aircraft out of circulation in CONUS. This created another crisis because CONUS based Navy requirements were unable to be satisfied.

The need for a dedicated airlift for high priority cargo was quickly recognized. This need generated momentum for the establishment of two airlift services, one each for the Navy and the Air Force [Ref. 1: p. 5]. As a result, the Department of the Navy established the Quick Transportation System (QUICKTRANS) contract to satisfy all cargo air service requirements within CONUS, for both scheduled and unscheduled operations. QUICKTRANS is the primary domestic[3] air cargo system for the Navy, and is also known as the Navy's Contract Cargo Airlift System. Simultaneously, the Department of the Air Force created the Logistic Air System (LOGAIR). Both systems had the approval of the DOD.

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[3]Domestic, as stated, refers to the continental United States and between and within nearby offshore areas [Ref. 7].

QUICKTRANS is contracted for by MAC, which in turn designates the Navy Material Transportation Office (NAVMTO) as the Administrative Contracting Office (ACO) to administer it. The ground terminal and land haul portion of QUICKTRANS is contracted by different military activities under the single manager assignment of Military Traffic, Land Transportation, and common user terminals concept.

In testimony given to the House of Representatives concerning Military Air Transportation in 1958, common commercial air carriers complained that MATS operations were unfairly competing to their detriment. However, this did not prevent the continuation of MATS; but it did create pressure to make the military enter into contracts with commercial air carriers as defined by the Federal Aviation Act of 1958. Furthermore, in 1963 Assistant Secretary of the Air Force Joseph Imirie stated that QUICKTRANS and LOGAIR were needed because route structures and services of the common carriers did not meet DOD's requirement for direct resupply [Ref. 5: p. 20]. This statement was correct, but it is hardly applicable to today's civilian air freight industry.

With the establishment of the Civil Reserve Airlift Fleet (CRAF)[4] in 1962, further justification was established to maintain QUICKTRANS and LOGAIR, since their status as a domestic portion of the CRAF would not be affected by either a national emergency or DOD requirements. However, during the hearings establishing the CRAF, the Defense Traffic Management Service and the military services were said to be studying use of door-to-door, air-truck combination delivery service from common carriers [Ref. 5: p. 20]. In the 60's and 70's, there is no doubt that the commercial sector could not have provided an integrated service. That assumption is not necessarily true in the 80's, and the Navy has slowly and methodically changed its established procedures to reflect this new environment.

QUICKTRANS's primary mission has changed very little over the past 36 years. It is to provide expeditious, flexible, and responsive movement of high priority Navy and Marine Corps cargo between major Naval Bases, Inventory Control Points, shipyards, repair facilities and other relevant locations primarily within CONUS [Ref. 7]. The QUICKTRANS system consists of two separate contracts and the guaranteed traffic award (GTA) service agreements that are administered and controlled by the Naval Supply Systems Command through NAVMTO. These two

[4]CRAF was created to double the MATS (subsequently called MAC) airlift capability through the use of commercial aircraft and crews during a national emergency.

contracts and the service agreements include the single air carrier (Southern Air Transport, Inc.), the terminal contractor (CFS Air Cargo, Inc.), and the QUICKTRANS dedicated/ expansion truck system, often called CONTRUCK.[5] Each contract is written by different services; MAC, the Navy Regional Contracting Center (NRCC), and the Military Traffic Management Command (MTMC), respectively. This inefficiency is a carryover of the single manager concept instituted over twenty years ago. The single manager concept's objective was to eliminate duplication and overlapping of effort with regard to transportation issues within DOD, and therefore improve effectiveness and economy of these operations and ensure that emergency and wartime requirements are met. The idea was basically sound, but when one looks at the bureaucracy created by the implementation of the policy, its costs intuitively appear to be excessive, both monetarily and administratively.

NAVMTO is mission funded with a revolving working capital account. Unlike a Navy Industrial Funded (NIF) activity, it does not charge its customers for its overhead. It is called a Navy Management Fund [Ref. 8: p. 3], whose explicit purpose is to move high priority cargo within time frames established by the Uniform Material Movement and Issue Priority System (UMMIPS). UMMIPS time standards for priorities 01-03 is three days and for priorities 04-06 is six days for delivery in CONUS [Ref. 9: encl. 5]. This includes point of embarkation (POE) holding time, loading, transit, unloading, point of debarkation (POD) holding time, and delivery to consignee. The QUICKTRANS operation costs approximately $41.3 million ($25.7 million for airlift services, $12.2 million for terminal services, and $3.9 million for truck services) per year in fiscal year 1986. This money facilitates the movement of approximately 60,798 tons (2,000 pound ton) of cargo and a distance traveled of approximately three million statute miles.

The Navy's criteria for the airlift contractor are so stringent that only one contractor (Transamerica, now called Southern Air Transport) has been able to meet the requirements. The current contract delineates flight schedules, patterns to be flown, frequency of airlift, and aircraft capabilities and configuration. This list is by no means complete, but is representative of the many requirements and does include the most important criteria.

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[5]CONTRUCK is only one of several relatively new programs in the Navy's transportation system. Several of the others are the Northeast Dedicated Truck System, Service Agent Material Expediters, Local Drayage, Surface Express, and Miramar Express (now called West Coast Air Station Express).

One criterion is that the contractor must furnish an IFR (instrument flight rules) equipped, turbine powered, multi-engined aircraft for the movement of 46,000 pounds of cargo. The aircraft must be capable of transporting a minimum of eight 108″ x 88″ 463L pallets or sixteen 54″ x 88″ 463L pallets and must be capable of truck-bed height, straight-in loading with a minimum cargo loading door size of 108″ high and 120″ wide. [Ref. 10: p. J-A-1]

These aircraft constraints are based on long-running, established policies which are not likely to be challenged and, in fact, potentially prevent any significant or innovative change to occur. Specifically, the 463L pallet requirement is based on the standard military pallet selected by the Air Force for air cargo transportation. The aircraft are compatible with the MAC transportation system, which is vital when one considers the need to minimize loading, unloading, and transfer times.

The need to be able to interchange containers or pallets is extremely beneficial during a crisis. Switching the present DOD 463L pallet system to the commercial container system is considered cost prohibitive [Ref. 11: p. 99], but some form of interchange intermodalism is important. There have been successful tests to convert civilian aircraft to carry the 463L pallet. By not resolving the commercial and military interface problem, the Navy and the Air Force are still tied down to the presently configured 463L pallet. Consequently, planes and airlines must be specially configured for conversion. The incongruity between the military air freight system's 463L pallets to the commercial air freight systems' air containers is analogous to the Navy's breakbulk orientation versus the steam ship lines' containerization. Project Intact (an Intermodal Air Cargo Test involving both the military and civilian firms) was conducted in 1976 to prove the potential advantages of interchangeability. It succeeded in illustrating the feasibility and effectiveness of the military and civilian sector working towards a common logistics goal; however, there are additional implications discussed in Chapter VI.

III. GROUND TERMINAL AND AIRLIFT CONTRACTS SUMMARY

The ground terminal and airlift contracts are the cornerstones of the QUICKTRANS system. The ground terminal contract provides a multitude of services not specifically related to loading and unloading aircraft. Conversely, the airlift contract is relatively straightforward and is closely interfaced with the terminal contract. A good understanding of each contract will provide a basis for reference in later chapters.

A. GROUND TERMINAL CONTRACT

The ground terminal contract [Ref. 12] was signed on 19 March 1984, and as of 1 October 1986 there have been twenty modifications. The basic contract has 194 pages, going into great detail on what services are provided by the contractor and for what unit price.

The general purpose of the contract is to engage a contractor to equip and operate the thirteen terminals and overall terminal system in an efficient and orderly manner. The contractor is required to be technically competent and provide cargo movement and handling equipment. An overall management capability to provide terminal service operations is required. The contractor must perform when required regardless of equipment failures or management problems.

The 1984 solicitation was the first time a multi-year contract had been offered for transportation services. Over a five year period, its value was expected to be over fifty-five million dollars, and it was used to induce new bidders into submitting bids. The existing contractor plus several others submitted bids. The winner was CFS Air Cargo, Inc., and they replaced CFE Air Cargo, Inc. on 1 October 1984. CFE Air Cargo, Inc. had been the contractor for the previous eight years.

1. Administrative Requirements and Guidelines

The Defense Contracting Administration Service Management Area (DCASMA) Boston was designated as the Administrative Contracting Officer (ACO) with NAVMTO as the Contracting Officer's Technical Representative (COTR). The COTR's responsibilities are accomplished by the Movement Coordinating Department at NAVMTO and are as follows:

1) Provide technical direction to the operation of the QUICKTRANS system.

2) Obtain data for analysis of systems operations through reports and inspections.

3) Initiate, authorize and issue schedules and changes thereto.

4) Advise contractor of expansion flights.

5) Procure alternative or substitute transportation services.

The COTR is also responsible for monitoring, administering, and technically managing the contract. He is the day-to-day representative whom the contractor contacts to resolve problems, except for changes in scope or intent of the contract which require a formal modification.

The administrative requirements of the contract are similar to any other contract. It contains direction concerning how invoices are to be submitted, how the Prompt Payment Act is to be administered, and how progress payments are to be made. It discusses liquidation and reduction or suspension of the contractor. It includes guidance on wage rates for cargo ground handling and air freight terminal operations. The rates are the amount the U.S. Department of Labor has determined to be appropriate for different categories of employees.

The contractor is required to provide the mangagement reports listed in Appendix A. The purpose of these reports is to provide management information and a means to ensure contractor performance. All monthly management reports are due to NAVMTO by the fifteenth of the succeeding month, with the exception of daily operating reports. The contractor is encouraged to reduce ground time, within constraints of safety and common sense, in order to help the airlift contractor maintain the published schedule. However, he is normally given a set amount of time to provide ground services. If everything is ready to fly ahead of schedule, and is approved by NAVMTO, the contractor is encouraged to have the aircraft depart early.

A quality control program and several other legal requirements placed on both parties to the contract are documented. A quality assurance surveillance plan is utilized by the government to monitor the performance of the contractor during the life of the contract. This is also used in determining incentive awards.

Written into the contract is a provision for an award fee. This is an incentive for the contractor to perform above minimum requirements listed below. The maximum award fee is $60,000, to be available quarterly. It is not cumulative; therefore, the contractor is motivated to try to attain it each quarter. It is awarded at the sole discretion of the Commanding Officer, NAVMTO, using the following factors to help determine the award:

1) For each percentage point over 91 percent of the aircraft load as measured by cube weight ratio (cube weight ratio is a comparison of cube to weight at a ratio of twelve and a half pounds to one cubic foot), an award fee of $10,000 can be given.

2) Adherence to government direction in loading specified cargo to proper destinations.

3) Aircraft being loaded and ready to depart in alloted ground times.

4) Cargo moving through the system within established time standards.

5) Maximum utilization of available truck space.

6) Truck departure time being met.

7) Shipment input record data entry into the Infosystem providing continuous on-line real time operation.

The contractors submits a self-evaluation of its performance for the period evaluated and an award board is formed, primarily using personnel from the Movement Coordinating Department. Their decision, as approved by the Commanding Officer, is final and the contractor has no recourse to overturn their decision.

2. **Operational Requirements and Guidelines**

The contractor's goal for maximum utilization of available space on the aircraft is an 88 percent (cube weight) system load factor. The 88 percent system load is expected to reduce the contractor workload and provide maximum utilization of the contracted air carrier's aircraft. Management reports indicate an average above 92 percent for the period March-September 1986 for aircraft utilization. Additionally, the truck load factor is to be maintained above 85 percent. However, it has averaged 84 percent during the same time period.

The QUICKTRANS documentation procedures are based on a computer controlled information system commonly called the Infosystem. The contractor is required to furnish and operate all associated computer equipment. It is capable of on-line real time operations. This includes the capability of running reports simultaneously with on-line operations and providing real time information during preventive maintenance and other occasional downtime periods. The current contractor used government funds to develop the appropriate software.

NAVMTO provides the Infosystem with the Cargo Routing Information File (CRIF) data, on a daily basis or more frequently, as required. The data contain the proper QUICKTRANS or MAC destination or origin. The CRIF is reviewed for each consignee's delivery address at the time material is available for delivery and allows reshipment as required. If the shipment is not to be delivered as originally manifested,

the contractor will remark the shipment and correct the transportation control number (TCN) record in the Infosystem. This record includes an indicator which will tells a person tracing or reviewing printouts that the routing was changed.

The following Navy locations must have output devices with on-line print capabilities to allow for hard copy printouts (each terminal is under a maintenance agreement):

1) Operation Control, NAVMTO, Norfolk, Virginia
2) PMOLANT, Charleston, South Carolina
3) PMOPAC, Bremerton, Washington
4) COMNAVAIRPAC, San Diego, California
5) COMNAVSURFPAC, San Diego, California

Each ground terminal in the QUICKTRANS system requires a terminal for operational entries. As each terminal prepares cargo for shipment by building individual pallets, TCN's will be used to prepare a Pallet Load Report (PLR) for computer input. Each pallet will be identified by a unique Pallet Designator Number (PDN). Loading And Routing (LAR) reports will be input by NAVMTO to direct cargo movement. The LARs will be sent out five hours prior to departure and changed up to within one hour prior to departure. The PLR and LAR reports assist the contractor when tracer action is required. Tracer action will normally be directed by NAVMTO to the origin and destination terminals for action. The contractor must be capable of resolving lost shipments within four hours of the request.

Transportation Priority (TP) 1 material is required to be expedited through sorting and processing in order to be ready for the next scheduled departure. At worst, sorting and processing should be completed within four hours of receipt of material at the contractors' terminal. TP-1 material is to be at the destination and available for pickup within 72 hours of receipt into the system. For TP-2, the time frame is 144 hours.

The contract delineates specific functions to be performed at each terminal. As an example, services provided by the contractor at Travis AFB greatly exceed those provided at Charleston AFB or McChord AFB. As the host activity at those bases, Air Force personnel physically load, reposition, and unload cargo to and from the aircraft and other vehicles delivering or picking up cargo. At the Military Air Terminal, Naval Air Station, North Island, San Diego, California, the contractor will, in addition to the normal terminal operations of the QUICKTRANS system, load and

unload all baggage, cargo, and U.S. Mail from aircraft such as Carrier On-Board Delivery (COD) aircraft, helicopters, and Special Assignment Airlift Missions (SAAM).

1. NAS Norfolk, Norfolk, Virginia
2. NAS Key West, Keywest, Florida
3. NAS Pensacola, Pensacola, Florida
4. NAS North Island, San Diego, California
5. NETC Newport, Newport, Rhode Island
6. NSC Detachment, Long Beach, California
7. 436th Military Airlift Wing, Dover, Delaware
8. 437th Military Airlift Wing, Charleston, South Carolina
9. 60th Military Airlift Wing, Travis, California
10. NAS Jacksonville, Jacksonville, Florida
11. McChord AFB, Seattle, Washington

Figure 3.1 Inter-Service Support Agreements.

In accordance with these varying terminal requirements, Inter-Service Support Agreements (ISSAs) between NAVMTO and the host activities are provided in the contract. (See Figure 3.1 for a listing of ISSAs.) These agreements provide details of the layout, facilities, and services provided by the host activity at each QUICKTRANS terminal.

The ground terminal contractor is required to be able to accommodate delays or additions in scheduled arrivals or departures at no extra cost to the government. The requirement is to initiate loading and unloading within one hour after arrival of an aircraft. When an aircraft is being positioned for an origination from a previous flight and offloading is required, one hour is allocated for offloading. An additional hour is allocated for loading. The above one hour time limits may be increased by fifteen minutes depending on the terminal location. If there are changes to the schedule, NAVMTO will notify the terminal contractor. If the terminal contractor fails to load or unload an aircraft within the time frames allowed, any costs the government may incur as a result will be charged to the contractor.

All flights, trucks, or containers will be serviced whether scheduled or non-scheduled, and minimum staffing will be maintained during maintenance of aircraft being utilized in the QUICKTRANS system. The QUICKTRANS terminals will be physically manned during normal QUICKTRANS customer working hours as specified in the contract. For most terminals this means 24 hours per day.

Protective Security Service (PSS), Signature Security Service (SSS), and Signature Service Required-QUICKTRANS only (SSR-QTO) material will be placed in a closed area meeting requirements of the Industrial Security Manual (DOD 5220.22M) and other security publications and guidance. The contractor must provide a locked closed area in which classified material can be secured while awaiting movement. Only authorized personnel can pickup and/or deliver such material, and each shift at each terminal must have a person designated and cleared to handle SECRET cargo. A security custody log must be maintained called the Signature and Tally Record. SECRET material requires protective security service. CONFIDENTIAL material requires signature security service, and material of a sensitive nature (such as pilferables and highly valued items), although not classified, will require signature service QUICKTRANS only.

Hazardous material is received, stored, loaded, and unloaded in accordance with Department of Transportation (DOT), DOD, and Federal Aviation Administration (FAA) requirements. Personnel handling hazardous material must be trained in approved courses of inspections and be recertified at specified intervals. Accidents of any kind must be reported promptly to NAVMTO, who will advise the contractor of disposition when appropriate. Detailed procedures contained in DOT regulations and DOD directives will be used to handle the immediate incident.

Material requiring refrigeration is handled specially. The container must be marked by the shipper, properly giving specific guidance as to what action is required. Terminal managers are responsible for ensuring the appropriate temperatures are maintained and for requesting assistance from NAVMTO if unable to fulfill the requirements.

Other special handling material are Polaris/Poseidon/Trident Fleet Ballistic Missile shipments. These may require specific temperatures or may require the recharging of the instrument being shipped (such as guidance capsules, gyros, velocity meters or other sensitive electronic equipment).

Over, short, and damaged shipments shall be identified, documented, and handled in an appropriate manner. Although the contractor has limited liability for the loss of or damage to government shipments, the urgency and high value of the material shipped requires optimum care and attention to all shipments. Material being received at the origin station without documentation or improper documentation showing shortages or overages will be resolved through, (1)contacting the originating shipper, and (2) with the assistance of NAVMTO providing guidance on further movement. All discrepancies are documented at the time of receipt by the contractor. Loss of shipment within the system shall be reported to NAVMTO, and the contractor will make an extra effort to locate it. Additionally, material damaged in transit will be documented, and repairs will be effected to the container to prevent further damage, if possible.

Material destined for ships in port at Norfolk, Virginia will be delivered by the contractor. The material must weigh less than fifty pounds, not be considered hazardous, not be classified, and not have any dimension over 36 inches. A signature, date, and time will be obtained by the contractor upon delivery to the quarterdeck of the ship.

To ensure the expeditious shipment of all material, NAVMTO, as the airlift clearance authority (ACA), evaluates shipments according to the transportation priority, required delivery date, and end use of material through evaluation of the project code. When authorizations are issued for specific shipments, the shipment activity is furnished with the origin terminal code and the scheduled flight designator and routing. The shipment activity is instructed to indicate this information on the shipping document.

The uneven generation patterns of material eligible for airlift occasionally result in unused capacity being available on specific QUICKTRANS flights. Since the QUICKTRANS airlift service is procured on a plane-mile-cost basis, it behooves the Navy to fully utilize the contracted capabilities of each flight insofaras possible. Low priority material used to fill underutilized aircraft is called Economy Cargo, and is requested by NAVMTO from shipping activities such as supply centers to achieve maximum utilization of aircraft space. Administrative costs involved in rerouting material by air must be evaluated. If it is determined to be the most economical manner to move the material, then it will be shipped by air. Economy Cargo is never backlogged to fulfill a requirement for additional cargo.

3. Terminal Contractor Interface with Dedicated Truck Service

In addition to the airlift service, QUICKTRANS operates a scheduled dedicated truck service. It normally consists of an exclusive use, sealed van loaded and unloaded by the QUICKTRANS terminal contractor, another commercial concern, or military activity. There are occasions when high priority material is combined with lower priority material carried by CONTRUCK. Commercial truck and container service may be required to reduce backlogs, or it may be advantageous to truck material between two terminals due to weather conditions prohibiting flight operations. Trucks or containers will be loaded and ready to depart within eight hours of notification if trailers are prepositioned, or three hours after the spotting of a trailer by the carrier, whichever is greater.

Government Bills of Lading (GBLs) are used in payment for dedicated truck services and are prepared by NAVMTO. NAVMTO is responsible for coordinating all dedicated truck operations, and issuing or providing advance precut GBLs and Navy serially numbered truck seals to QUICKTRANS terminals. To alleviate the use of numerous GBLs, NAVMTO was granted permission by Military Traffic Management Command (MTMC) to issue one GBL per month to cover payment for all one-way QUICKTRANS line hauls. Each one-way line haul must be covered by a commercial waybill drafted by the carrier, and must cite the GBL number to be used for that month's shipments. All dedicated trucks are bulk loaded, and the terminal contractor is responsible for ensuring freight is properly stowed so it will not be crushed or fall from stacks during transit. The terminal contractor prepares various reports such as a truck load report and a truck departure report. Freight shipped by truck is very similar to that shipped by airplane.

Consolidation of Less than Truckload (LTL) freight is accomplished at QUICKTRANS air and truck (at Norfolk, Virgina and Boston, Massachusetts) terminals for movement via commercial motor carriers across country. This requirement was added to the original contract. The terminal contractor receives material via various means and must identify, segregate, label, and provide a receipted copy of the shipping document to the origining activity. CONTRUCK freight is accounted for within the QUICKTRANS Infosystem, but will be uniquely identified as CONTRUCK data. Movements with a combination of QUICKTRANS Dedicated Truck and CONTRUCK or NDTS have a separate line identifying each type of movement and are billed separately.

Cargo consolidation, documentation, and computer support services at Norfolk Naval Air Station and Travis AFB for cargo consigned to overseas Naval activities was initiated this year to take advantage of shipping rate breaks offered by MAC. This service (NAVCONS) has partially replaced the commercial air consolidation program ran by Burlington Northern, called the Service Agent Material Expediter Western Services (SAMEWS). The savings generated by MAC more than offset the $130,000 per month (eleven percent) increase to the cost of the original terminal contract. NAVCONS, as it is called, receives cargo from various DOD and commercial sources by government owned or commercially operated trucks, and also through the QUICKTRANS system. The contractor consolidates the material on 463L pallets by destination, prepares a Military Shipping Label with a lead TCN, and turns it over to MAC for shipment. The contractor enters the lead TCN and all other TCNs into the Infosystem. Once the type of aircraft, tail number, manifest number, manifest reference, lift date, and other pertinent information is available from MAC, it is entered into the Infosystem to allow for tracing follow-ups.

4. **Ground Terminal Cargo Handling System**

The ground terminal contractor must provide a modern palletized cargo handling system to handle all cargo within the time alloted by the contract. It must fully exploit the flexibility, speed, and economy inherent in any modern aircraft or truck equipped to accept palletized loads. The system must satisfactorily operate with side and/or end loaded cargo aircraft, but will be optimized for aircraft having truckbed height cargo compartment floors. It must have a high degree of operational reliability and be capable of providing efficient, economical services under the most severe conditions and climatic environment of any QUICKTRANS terminal location. Ideally, it will provide a rapid and reliable flow of cargo through a terminal using a minimum amount of manual handling.

The pallet handling equipment will be compatible with the military's 463L pallets and various sizes of commercial pallets. All equipment must incorporate safety features which will permit safe operations around explosives or flammable vapor areas, and must comply with various safety regulations. In addition to various handling equipment and other labor saving devices, the contractor must provide scales with a minimum rated capacity of 12,500 pounds or some other means to ensure the weighing of all pallets prior to aircraft loading.

Included in the terminal contractor's contract is the requirement to load seavan containers at Travis AFB, Travis, California for overseas movement. This requirement was a modification to the original contract. Cargo for loading seavans will consist of freight received through the CONTRUCK system or delivered to the terminal from various consignors. Cargo will be destined to Pacific Ocean destinations.

B. AIRLIFT CONTRACTOR CONTRACT

The current airlift services contract is with Southern Air Transport, Inc. for the period 1 October 1986 through 30 September 1987 [Ref. 10]. It is a firm fixed price contract with provisions for expansion to twenty percent above predicted total system flights if required. Similar administrative requirements are placed on the airlift contractor as discussed in the Ground Terminal Contractor Administrative Reqirements and Guidelines Section above.

Notification is required eight hours in advance to modify, or cancel flight schedules or route patterns. Flights can be delayed by NAVMTO up to four hours without additional cost to the Navy. The air carrier must position his empty aircraft, in operational condition, at points of flight origination two hours in advance of scheduled departure. The airlift contractor is responsible for providing air transportation services which operate over the routes established by NAVMTO, as the Administrative Contracting Officer (ACO). Appendix B shows the current route patterns and frequency of airlift. These services include performance of flight operations with contractor operated aircraft and all related services (such as maintenance, fleet service, supply support of aircraft, and other related ground services) which are the responsibility of the airlift contractor.

The contractor provides an air start unit and any other equipment necessary to perform scheduled maintenance at the selected maintenance location of Miami, Florida. Adequate maintenance capability and spare parts stocks are provided at key points in the QUICKTRANS system to ensure schedule reliability. In general, the contractor will be self-supporting at all bases of operation.

All aircraft are equipped with a cargo pallet loading system compatible with 463L pallet design and flexible or rigid commercial type of pallets. It must be capable of loading a minimum of sixteen 54 inch by 88 inch pallets and withstand and restrain a minimum 3,500 pound load on the same pallet. The option exists to bulk load the aircraft to meet requirements for oversized freight.

The contract requires performance using Lockheed 100-30 aircraft, and NAVMTO, at its sole discretion, may permit the occasional substitution of other aircraft for performance of the contract. All aircraft used must be licensed, operated, and maintained in accordance with all applicable rules and regulations of the FAA, DOT, and DOD.

Hand-to-hand signature service utilizing the Signature and Tally Record is required when classified material is transported. The strict control described in the ground terminal contract section is the same for the airlift contractor. There must be a crew member on each flight crew authorized to sign for classified material. Shipments of hazardous material will be accompanied by the appropriate certifications and authorizations discussed in the terminal contractor section. The aircraft will be used solely for military cargo when on designated military flights, and will have the capability to carry two authorized passengers. Repetitive failure to conform to contract requirements are grounds for termination of the carrier by the government.

IV. QUICKTRANS EFFECTIVENESS

Measurement of QUICKTRANS system effectiveness is very difficult. Subjective judgement is often required to complete an evaluation. However, many attempts have been made. In 1978, the Douglas Aircraft Company was solicitated by the National Aeronautic and Space Administration (NASA) to identify air transportation trends and requirements for the 1990's [Ref. 13]. In conducting their study, they developed a model to help ascertain what criteria a transportation system should provide to a customer. These criteria will be used to evaluate the QUICKTRANS system. Table 1 is a partial list of the Douglas survey responses [Ref. 13: pp. 436-437]. It includes only criteria that would be applicable to the Navy. It also reflects the commercial world's profit oriented attitudes as opposed to the Navy's operational national defense requirements. Therefore, mean importance scores shown in Table 1 do not reflect the emphasis placed on selection criteria used by Navy customers. The mean importance score represents an average of all respondents' ratings for each criterion out of a possible score of 100. Criteria performance evaluations contained in this chapter resulted from interviews with Navy managers, contractor managers and employees, management reports, inspection reports, customer comments, and the author's personal experience.

A. CRITERIA DESCRIPTION

Criterion one, consistent, on-time pickup and delivery, is self-evident. The carrier must conform to established schedules or promises made to the shipper. This criterion is important to the commercial shipper because if the required material is not delivered in a timely manner, it may create profit losses due to such reasons as production delays and lost sales. On the other hand, the Navy views this criterion with the idea of ensuring a ship can get underway, an airplane can fly its mission, or any number of operational commitments being met.

Criterion two, time-in-transit, is the total time that elapses between the time the shipper makes the material available for dispatch until the carrier delivers the goods to the specified destination. In today's just-in-time inventory procedures, being able to know exactly how long it will take to request and receive material is vital. Ensuring that inventory carrying costs are kept to a minimum will favorably impact profitability

TABLE 1

MEAN IMPORTANCE VALUE SCORES FOR SELECTION CRITERIA USED TO EVALUATE MODAL CHOICES

	Selection Criteria	*Mean Importance Score*
*	1. Consistent, On-time Pickup and Delivery	92.4
*	2. Time-in-Transit	79.1
	3. Points Served by Mode, Including Routing Authority	73.9
	4. Frequency of Service	72.1
	5. Loss and/or Damage History	69.2
	6. Timely Acceptance of Shipments of All Sizes	65.6
	7. Door-to-Door Delivery	61.9
*	8. Shipment Tracing Capability	61.8
	9. Prompt Claim Service	60.8
*	10. Adaptability to Specific Company Needs	55.5
*	11. Availability of Standard Equipment	50.6
	12. Serviceability at Off-Line Points	50.2
	13. Local Reputation of Carrier Firm(s)	47.1
	14. Availability of Special Equipment and Services	41.0
	15. Information Services Offered	35.0
*	16. Consolidation and/or Breakbulk Services	33.9

Source: NASA Contractor Report 158914, Volume 1.

Note: Criteria marked with * are important to the Navy. See text for discussion.

and productivity. Productivity in the Navy's case relates to ensuring that UMMIPS time standards are met. By meeting those minimum standards, operational commanders can estimate when they will receive a vital part and consequently improve their readiness.

Criterion three, points served by mode including routing authority, refers to the ability of the carrier to provide two types of service: either all the points of origin and

destination desired by the shipper or over a specific route which links various origin-destination (O-D) pairs. Additionally, direct control over the routing authority gives the carrier the ability to provide flexible service to the shipper. The Navy appreciates this asset because of potential contingent requirements to divert, hold, or otherwise change the established schedule on short notice. A carrier relying on another firm for the transportation of material would not be able to respond as reliably.

Criterion four, frequency of service, is just what it implies. Its importance to the shipper is similar to the reasons identified in criterion two. The Navy wants to make sure material is constantly moving and meeting the UMMIPS standards.

Criterion five, loss and damage history, is important to both commercial entities and the Navy. High loss and damage increase the cost to the customers in time and material required to accomplish a task, whether it is to get a ship underway or start a manufacturing job. Although the commercial business may not have to pay for the loss or damage, in almost every case the Navy will pay expenses since it is a self-insurer.

Criterion six, timely acceptance of shipments of all sizes, refers to the ability of the carrier to accept material at any time. High priority cargo may be of an unusual shape or size and may be needed immediately. The carrier with the most flexibility has the advantage.

Criterion seven, door-to-door service, involves the carrier picking up material at the shipper's location and delivering it to its final destination. This service makes it very convenient for the customer. There is no requirement to arrange for additional transportation from an airport or central terminal to the final destination.

Criterion eight, traceability, may be the most important criterion for the Navy. Being able to trace a shipment accurately from entry into the system to its exit is vital to the Navy customer. Cargo can be located and diverted in emergencies if it can be found in the system quickly. Knowledge of a required material's location gives the operational manager (military or civilian) the ability to plan and rely on the material's estimated arrival time. Under the worst case scenario, if material is lost, records can be reviewed to identify where it was last located and where it might be located due to a shipping or handling error.

Criterion nine, prompt claim service, is more important to civilian industry than to military organizations. This criterion is tied directly to loss and damage. It revolves around how quickly the carrier processes loss and damage claims. Although the Navy

is concerned about loss and damage, rarely is a carrier that is utilized by the Navy required to pay claims or damages resulting from claims.

Criterion ten, adaptability to specific company needs, is the ability of the carrier to respond to non-scheduled requirements of the shipper. This may be considered more important to the Navy than to private industry because of frequent operational emergencies occuring in a military environment. Having contractual control over the carrier provides the Navy more flexibility in handling contingencies.

Criterion eleven, availability of standard equipment, refers to those equipments which a shipper would normally expect a carrier to include in its inventory of equipment. This criterion takes on a more important aspect when compatibility with the Air Force's cargo pallet loading system is considered.

Criterion twelve, serviceability at off-line points, refers to the ability of the carrier to service points not normally serviced. Frequently, the carrier may require additional assets, such as additional aircraft, to be acquired or routing and/or schedules must be modified.

Criterion thirteen, local reputation, is more applicable to private industry. The shipper's known ability to provide reliable, quick, and efficient service is important to a civilian company because it involves less risk. An unknown carrier creates more uncertainty and, consequently, risk and potential loss of money due to poor service. However, local reputation does apply to the Navy. If the shipper does not trust the QUICKTRANS system, the possibility exists that another more expensive carrier will be used.

Criterion fourteen, availability of special equipment and services, involves the ability of the carrier to provide any special equipment necessary to meet customer demands and to provide any other services required by the shipper. If the shipper has unique items requiring special handling equipment, it is expected that the carrier has it on hand or is able to obtain it quickly.

Criterion fifteen, information services, is the ability to provide knowledge about all transportation options available to the shipper whether it be by air, truck, rail, or water. Tailoring various transportion capabilities to a shipper's requirements is the goal. Providing information such as time schedules, connecting services, and any special advantages in moving cargo will benefit the shipper by reducing overall costs and time-in-transit.

The last criterion listed is the ability of the carrier to provide consolidation and breakbulk services. This is just as important to the Navy shipper as it is the commercial shipper. Consolidating small shipments into larger ones to gain lower transportation rates, and then breaking them down for delivery to their ultimate destination, is clearly advantageous to all shippers.

Of the criteria listed above, the following are the six most important criteria to Navy customers (as mentioned previously, these criteria were selected based on interviews with Navy customers and the author's own judgement):

1) Consistent, on-time pickup and delivery.
2) Time in transit.
3) Shipment tracing capability.
4) Adaptability to specific company needs.
5) Availability of standard equipment.
6) Consolidation and/or breakbulk services.

B. RATING QUICKTRANS EFFECTIVENESS

In evaluating QUICKTRANS against the sixteen criteria above, the author used a subjective scale of High, Medium, or Low to evaluate each criterion. A rating of high indicates that QUICKTRANS is fully effective in accomplishing the criteria. Medium indicates that QUICKTRANS meets the requirements of the criteria at a satisfactory level but could be accomplished much better. Low represents the inability of QUICKTRANS to meet the requirements of the criteria.

Criterion one, on-time pickup and delivery, is rated high because of the historical performance of the contractors over the past two years to meet schedules. The contracts discussed in Chapter III are particularly specific about time schedules (see Appendix B) and the contractors responsibility for meeting them. There are explicit reporting requirements to allow easy monitoring of contract compliance, and penalties can be assessed or default found for non-compliance.

Criterion two, time-in-transit and criterion four, frequency of service are both rated high for the QUICKTRANS system. The main air terminals are operated twenty-four hours a day, seven days a week. Management reports over the past twelve months show UMMIPS time standards being met. Under the current system, door-to-door delivery is not required except in the case of Norfolk where the terminal contractor is required to deliver to the waterfront piers via the supply center. If the

Navy wanted to have door-to-door service throughout the QUICKTRANS system, it would be easy to modify the contract. Additionally, if the Navy wanted to pick up material at the terminals on weekends, it could be arranged. Currently, getting material delivered to the final destination on weekends is the weak link in prompt shipment times. However, ensuring pickup on weekends is not QUICKTRANS's mission.

Criterion three, points served by mode, is rated medium because not all Navy and related activities are served by the QUICKTRANS system. Yet, variations may be arranged either by aircraft or truck due to the control NAVMTO exercises over the contractors. In order to connect activities not in the system, normally trucking is arranged to transship the material to the final destination. The requirement to provide service to every naval related activity could be added to the cost of the QUICKTRANS system. Trucking would normally be the transportation mode of choice for short distances.

Criterion five is rated high. The thesis by Donald Hamann, *Loss and Damage in the QUICKTRANS System* [Ref. 14], rates QUICKTRANS above commercial alternatives. The ground terminal contract requires documentation concerning shipment condition upon entry into and exit from the system. Personal observation on two cross-country flights supports a rating of high in this area.

Criterion six, timely acceptance of shipments, is rated high because of the hours of operation of the terminal contractor. The contractor is on duty twenty-four hours a day, and although there are specific times for drop off or pick up, special arrangements can be made. The cargo handling assets required to move heavy or outsize cargo is always available.

Criterion seven, door-to-door delivery, is rated low because it only exists in the Norfolk area. In all other areas, the service consists of terminal-to-terminal delivery. The option does exist to add a door-to-door requirement, but the cost would be high as mentioned previously. Local truck drayage currently provides connecting service from the terminals to final destination. The various local delivery services are not considered part of the QUICKTRANS system. If they were, this criterion would be rated high.

Criterion eight, the ability of the QUICKTRANS Infosystem to provide shipment tracing services, is rated very high. The computer system, with its numerous input and output terminals, allows for exact location of specific material. Response

times to inquiries are less than four hours for problem shipments as specified by the terminal contract.

Criterion nine, prompt claim service, is rated low because the Navy does not emphasize it and the prerequisite to file a claim prevents it in most instances. Loss and damage claims filed by the government, against the contractor, are rare because the contract requires proof of mischievious conduct on behalf of the contractor's employees. There are no other provisions in which the government can process a claim.

Criterion ten, adaptability to specific company needs; criterion eleven, availability of standard equipment; and criterion fourteen, special equipment availability are all rated high. The contracts allow for non-scheduled shipments to take place and require the cargo handling system to be compatible with 463L pallets and capable of handling any Navy cargo. NAVMTO can add, cancel, or redirect QUICKTRANS flights as required. The QUICKTRANS system can be manipulated to the needs of the Navy with minimum effort or notification using available standard equipment.

Criterion twelve, providing service at off-line points, is rated medium because QUICKTRANS is designed to be used in limited high usage areas. As discussed previously, changes to the routing structure can be accomplished on a case by case basis, but that is not the norm. Any off-line points can be serviced by truck, as required, but that may be outside the QUICKTRANS system.

Criterion thirteen, local reputation, is rated as medium. This criterion is very difficult to judge because many Navy customers or users are not familiar with what the QUICKTRANS system is required to accomplish. Primarily, the requirement is to move material from terminal-to-terminal. Navy users are more interested in a door-to-door result. From that perspective, interviews with Navy personnel are inconclusive. Sometimes QUICKTRANS is considered satisfactory and other times it is not.

Although criterion fifteen, information services, have not been emphasized in the past, they are becoming more important. Initiatives such as seavan stuffing and NAVCONS, provided by the terminal contractor at Travis AFB, are the start of an complete transportation system using air, land, and water modes to ship material in an economical, efficient, and time sensitive manner. For this reason, information services are rated as medium.

Finally, criterion sixteen is rated high. The contract has been modified to include consolidation services at various terminals. The terminal contractor is providing breakbulk services as a basic element of the existing contract.

C. SUMMARY

The Navy's QUICKTRANS system is not perfect, but can be considered highly effective overall. The six most important Navy criteria listed above are all rated high. As changes to the contracts occur, further improvements to the system can be expected.

V. COMMERCIAL VERSUS GOVERNMENT CARGO TRANSPORTATION

In 1983, a thesis entitled *Contracting Initiatives to the Navy Quick Transportation System* was written by Arthur D. Holden and Charles J. Weber [Ref. 5]. The authors concluded that the commercial system they proposed represented an effective and cost efficient alternative to the QUICKTRANS system. With the assistance of a commercial air cargo carrier (Emery Air Freight), they estimated the cost for a specific service and compared it to the Navy's cost for a similar service during fiscal year 1982. This chapter provides an estimation of the Navy's actual cost to accomplish the service proposed in Holden and Weber's thesis and compares it to the commercial air cargo carrier estimated costs. Additionally, potential flaws in their thesis are highlighted.

A. EMERY VERSUS QUICKTRANS

Holden and Weber's thesis attempted to justify the replacement of the two basic Navy contracts with one integrated contract. By combining the land haul service agreements, the airlift service contract, and the ground terminal contract into one comprehensive contract, it was expected that less duplication of effort would occur; an enhanced throughput time would result due to less handling; less handling would reduce loss and damage; a single contract and contract rate would simplify contract administration, invoice submission, and bill paying; and the legal question of responsibility for movement of cargo would be clear, because from the point of cargo pick-up to final delivery the cargo would be in the hands of the commercial carrier. [Ref. 5: p. 46]

After Holden and Weber reviewed five different domestic air cargo carriers, Emery Air Freight was selected as the commercial representative for modeling and comparison with QUICKTRANS. Emery proposed an integrated air cargo transportation system to replace what the Navy had in existence then. As a point of fact, the current Navy system has slowly evolved to a level of customer service only slightly less than a door-to-door optional policy of a commercial carrier and meeting or exceeding UMMIPS time standards. In order to make a comparison between Emery and QUICKTRANS, it was required to segment Emery into the following four categories: land haul, airlift, ground terminal, and general. These categories are discussed below.

1. Land Haul Capabilities

Emery's trucking capability is extensive. It operates a fleet of over fifteen hundred radio dispatched trucks nationwide which are mainly forty and forty-two foot tractor trailers. Their main purpose in the system is to pick-up and deliver customer shipments locally, to transfer daily local shipment excesses to other Emery terminals or to other carriers, and to provide service to outlying areas. Although the entire fleet has the appropriate Interstate Commerce Commission (ICC), state, and local Department of Transportation licenses and operating authorizations, Emery's air freight forwarder certificate generally requires that all cargo must travel in the air during some portion of the movement. This would significantly alter the land haul feature of CONTRUCK in that the savings that are currently gained by surface transportation would be replaced by the flat rate transportation charge of the air freight forwarder [Ref. 5: pp. 53-54].

The land haul portion of the Navy's Integrated Transportation System (NITS) consists of a variety of dedicated truck subsystems. They include CONTRUCK, Northeast Dedicated Truck System (NDTS), Service Agent Material Expediters (SAMES), Local Drayage, Surface Express, and Bay Area Local Delivery (BALD), to name a few. They have developed into a spoke to hub system, frequently coordinating schedules with the QUICKTRANS flight schedule. Appendix C shows the current routes for CONTRUCK and NDTS.

The service area of the trucks depends on the distance to be traveled and the TP code. For example, TP-2 cargo can be diverted to CONTRUCK for cross-country hauls and other long distance non-air-qualifying movement. CONTRUCK was originally developed to carry TP-3 and TP-4 cargo. It was later utilized with the QUICKTRANS system. Costs for the QUICKTRANS expansion shipments are accumulated by the ground terminal contractor, thus keeping true CONTRUCK shipments separate and identifiable. Another example of a dedicated truck subsystem is NDTS. It is a regional system established to pick-up and deliver cargo from Norfolk, Virginia to Brunswick/Bath, Maine and various points in between. Other subsystems are mainly for local delivery services.

2. Airlift Capability

Emery's airlift capability is dependent on demand for service. In 1983, they owned twenty-six B727's and leased or chartered an additional thirty-seven aircraft, mostly DC8's. The fleet is considered self-sufficient in operations, and Emery provides maintenance, refueling, and servicing for their aircraft.

Aircraft used by Emery and the majority of the other civilian carriers are configured for a side-loaded, rolling pallet or container. Specifically, most carriers in civilian industry use a space efficient 125″ by 88″ netted pallet and or closed container. The Air Force's 463L pallet (108″ by 88″) can be loaded, but it creates an inefficiency resulting in less profits for the carrier. When outsize material is shipped, Emery personnel must manually load the aircraft using special pallets or the company must charter another aircraft capable of carring the cargo. Either way, it costs additional money not factored into the Holden and Weber models discussed below.

In 1983, Emery had 70,000 miles of flight operations per day. With that volume of traffic, the scheduling of aircraft is extremely flexible, and changes are made daily in other flight plans to accommodate customers' needs. [Ref. 5: pp. 51-52]

The airlift portion of the QUICKTRANS system was contracted out to Transamerica Airlines, Inc. (now Southern Air Transport, Inc. due to the divesture of the airline by Transamerica's parent company as of October 1986). In 1982, Transamerica operated 8 Lockheed 188C's and 12 Lockheed 100-30's (also known as Lockheed 382's) [Ref. 5: p. 124]. The Lockheed 100-30 is the civilian version of the military's C-130. They are all compatible with the MAC cargo system's 463L pallet.

Appendix B shows the current routes flown by QUICKTRANS. They have changed minimally since 1983 and are considered the most cost efficient locations for stops in the QUICKTRANS system. Emery's ability to stop at every major city within the continental United States is not necessary.

3. **Ground Terminal Capability**

The ground terminal capabilities of Emery are sufficient to replace every QUICKTRANS terminal. In 1983 there were one hundred and thirty-nine terminals of various sizes located at or near airports throughout the country. They served as consolidated receiving and shipping points for metropolitan areas and outlying areas served by the trucking portion of Emery. The local terminal builds up and breaks down containerized shipments. Containers can be delivered or material can be picked up in break-bulk or on customer pallets. For shipments linking with the MAC system, there appears to be a potential problem of double handling the cargo from an Emery container to an Air Force 463L pallet, as Emery would retain their civilian container system. This will greatly increase throughput times for overseas delivery.

Each evening in the Emery system, cargo is containerized and trucked to the nearest airport for shipment to the hub terminal. Any excess shipment quantities are

consigned to other carriers for shipment to Emery offices nearest the shipment's destination. Although excess shipments should happen infrequently, this could create a perception of lack of control by the carrier, which may not be acceptable to Navy transportation policymakers. Tracking vital transportation control numbers (TCN) could become extremely difficult.

The hub terminal at the Dayton, Ohio airport consists of a quarter million square foot full-service warehouse situated on a 2.2 million square foot ramp. Each night, all shipments are sorted on a nearly fully automated conveyor system utilizing postal zip codes to direct the shipments. Total sort and re-distribution time for all system shipments is approximately five to six hours per day. After sorting, shipments are re-containerized and loaded aboard fifty waiting aircraft for the flight to local terminals. The number of times cargo is handled by Emery does not indicate there is an advantage to a single integrated carrier handling cargo. The multiple handling would not reduce loss and damage.

It was also unclear whether Navy cargo would be integrated with Emery's commercial business. If it were, the Navy would have to comply with zip code requirements on the shipping document creating an additional burden for Navy shippers. If Navy cargo was handled separately, Emery could tailor a sorting system for military cargo. This scenario is unlikely, due to the cost of having two separate systems.

The hub terminal warehouse functions as the system air operating scheduling center, weather control center and headquarters for the EMCON (EMery CONtrol) system. By using the EMCON system, the customer can receive instantaneous shipment tracing and expediting information twenty-four hour a day. It is a real-time on line telecommunication network that a customer may verbally inquire, or link the inquirer's own data terminal directly into the IBM data processing system used by Emery. Additionally, management and operational information (such as selected data on shipment weight, movement and frequency, as well as limited user-specific statistics) are available. There are over twenty-five management reports (see Appendix A, which lists ten) provided by the current QUICKTRANS ground terminal contractor to the Navy on a monthly basis. In order for the Navy to obtain the same management reports required by NAVSUP and higher authority, an additional charge would be added.

In 1982, the ground terminal services for the QUICKTRANS system were contracted to CFE Air Cargo, Inc. (now CFS Air Cargo, Inc. due to low bid selection). This company basically performs the functions described above, except terminals are located at military installations. Also, the tracing and expediting function are more cumbersome in that the customer must call NAVMTO or one of the limited number of NAVMTO representative linked to NAVMTO, instead of any Emery office.

4. **General Capability**

Emery cargo aircraft have cockpit seating for two couriers or escorts on each flight, as do most cargo carriers, so Emery can realistically carry classified material aboard flights. They have no capability for carrying or transporting refrigerated cargo, nor do they carry or intend to carry Class "A" explosives, poisons, or fissionable radioactive materials. Liability requirements for loss and damage in transit similar to the QUICKTRANS requirements were acceptable. Although Emery corporate headquarters cited a very low and decreasing damage and loss in transit rate, a study conducted by D. K. Hamann in 1983 generalizes that commercial air damage and loss is higher than the QUICKTRANS system. [Ref. 14: p. 42]

B. HOLDEN AND WEBER COST MODELS

1. **Emery's Cost**

Emery uses a cost structure based on shipment weight and zoning of origin-destination (O-D) pairs. Costs are increased by fees for special handling, special products, and special services, and reduced by large shipment weight discounts. Holden and Weber selected a second day delivery schedule that appeared to meet or exceed UMMIPS time standards at minimum cost. The mathematical cost model they used is shown in Figure 5.1. The total annual cost is equal to the sum of all individual daily charges incurred for cargo shipments between each point of origin and destination, times a fifty percent discount rate.

There are several significant assumptions made within the above cost model that create doubt about the accuracy of their final figure. The discount rate of fifty percent was based on a telephone interview with an Emery executive who said that the then current maximum discount rate enjoyed by volume Emery customers was in the *vicinity* of fifty percent [Ref. 5: p. 63]. It is problematic to assume that the final figure negotiated would be the same as one discussed over a informational non-binding interview. Additionally, there is no indication that the fifty percent discount could be

$$TAC = 0.5 \sum_{i=1}^{N} (R)(W)$$

$$\$50{,}205{,}540/\text{year} = (0.5)(100{,}411{,}080/\text{year})$$

Where:

TAC = The total annual point-to-point transportation cost for all Origin-Destination (O-D) pairs

0.5 = The assumed discount rate

R = The appropriate rate for weight of shipment

W = The actual weight shipped between O-D pairs

N = The # of O-D pairs required to match the cargo movement within the QUICKTRANS system

Figure 5.1 Total Annual Cost Model.

taken on special handling cargo. Even if the fifty percent was taken, then the weight rate (R) variable in Figure 5.1 would have to be altered since their data for shipment did not take special handling cargo into account.

Special handling cargo includes material that exceeds the 108″ dimension of the 463L pallet such as helo blades, engine containers, periscopes, and fuel tip tanks. Hazardous material, such as flammable cargo or explosives, and classified material also requires special handling. There are many ways to look at the proportion of special handling cargo in the system. Of the total tonnage shipped via QUICKTRANS during the March through September time period in FY 1986, approximately twenty-two percent fell into the hazardous or classified type of cargo. This information comes from management reports generated by the ground terminal contractor.

Additionally, the combination of two or more 463L pallets (called pallet trains) for oversize material indicates special handling required. In 1980 an informal in-house NAVMTO study indicated that of 405 flight segments sampled, 89.6 percent had pallet trains (see Appendix D). Three years later another in-house study using random sampling revealed that forty-nine percent of the available pallet space was

utilized for pallet trains, albeit some of them were built for terminal operating and aircraft loading efficiencies. In summary, there is a substantial amount of cargo that is flown on QUICKTRANS that Emery would not be able to fly without manual intervention or the charter of additional aircraft.

The R variable has several factors calculated into it. As discussed previously, the shipment weight and zoning of O-D pairs is the basic rate with cost increases due to special handling, special products, and special services. Due to the scope of their thesis, the weights used on daily O-D's were all averaged and, therefore, an accurate rate could not be assumed. The variable W can not be representative of the actual weight shipped between O-D pairs. Holden and Webber indicate that averaging the weight increases the overall cost because it reduces a few large shipments to many smaller ones. Additionally, extra costs for special cargo were not included in the final rate either, thus reducing the validity of their claim that the total annual cost of $50,205,540 was overstated.

A major deviation from Holden and Weber's goal of having a single integrated company was the requirement to accommodate the need for a traditional land haul capability. Since Emery's rates are based on an air delivery system regardless of the actual mode taken, the comparative cost advantage for sending shipments less than 500 miles by a truck is not factored into the rate scale. Trucks can usually deliver goods in less time than any other mode for distances under 500 miles because of the door-to-door capability, as compared to a station-to-station flight with connecting truck transfers from shipper's door to consignee's door [Ref. 15: p.101]. In view of the fact that twenty-one percent of the 729 O-D routes being considered by their cost model were under 500 miles, a significant savings could be realized. In order to take advantage of the lower transportation cost for the shorter land haul routes, Holden and Weber utilized a dedicated truck system similar to those used by the QUICKTRANS system. They quietly dismiss the use of a dedicated truck system by implying that the Emery system would modify its manner of doing business and incorporate it into their system. This is a highly unreasonable expectation considering Emery's air freight orientation. By doing so, they reduced their estimated annual airlift cost from $50,205,540 to $35,048,772 while adding only $4.3 million for the trucking service. The final figure of $39.3 million is generated by the cost model in Figure 5.2.

$$TAC = 0.5 \sum_{i=1}^{N} (R)(W) + \sum_{ia=1}^{Na} Fp$$

Where:

TAC = The total annual point-to-point transportation cost for all O-D pairs

R = The assumed discount rate

W = The actual weight shipped between O-D pairs in pounds

N = The number of O-D pairs required to match the cargo movement with the QUICKTRANS system

Na = The number of dedicated truck routes

Fp = The firm fixed price per route

Figure 5.2 Total Annual Cost (Revised) Model.

2. **QUICKTRANS Cost**

Holden and Weber calculated the cost of the QUICKTRANS system to be $40 million dollars in FY 1982. They arrived at that figure by adding the costs of each segment of the system: land haul ($3.5 million), airlift ($25.5 million), and ground terminal ($11.0 million). However, their total does not include overhead related to administrative costs. Administrative costs should be added to the overall figure to allow for a more accurate comparison to the Emery system's total cost.

a. Land Haul Cost Model

The QUICKTRANS land haul segment was composed of independently operated trucking firms. Total annual cost was the sum of the firm fixed rates charged for O-D delivery performed in addition to a per stop charge and any security service charge. Figure 5.3 provides the mathematical model necessary to compute total annual cost of the land haul portion of the QUICKTRANS system.

b. Airlift Cost Model

The QUICKTRANS airlift segment required payment for the number of statute miles flown, the number of directed landings, and the fuel utilized in the

$$TCL = \sum Rt\,(X) + S\,(Y) + Sc\,(Z)$$

Where:

TCL = Total annual cost for the land haul segment

N = The number of dedicated truck contracts

Rt = The rate charges for the specific point-to-point service

X = The number of trips performed

S = The charges assessed per stop per trip

Y = The number of stops per trip

Sc = The charge for security service

Z = The number of trips which require security service

Figure 5.3 Total Land Haul Cost Model.

execution of the contract. The contractor was paid at the rate of $5.0667 per air statute mile flown and $250.00 per directed landing accomplished. Figure 5.4 provides the mathematical model necessary to compute total annual cost of the airlift portion of the QUICKTRANS system.

c. Ground Terminal Cost Model

The basic cost of the ground terminal contract covers operational requirements. In addition, there was a quarterly award fee contingent upon the quality of the operational performance as discussed in Chapter III. Figure 5.5 provides the mathematical model necessary to compute total annual cost of the ground terminal portion of the QUICKTRANS system.

C. QUICKTRANS OVERHEAD COST ANALYSIS

An analysis of each of the components of possible overhead is required to determine what costs could be reduced or eliminated by selection of a commercial freight forwarder like Emery, keeping in mind that the requirement for a dedicated truck system similar to the existing QUICKTRANS system is still a requirement. The main components are personnel and computer hardware.

$$TCA = \sum_{i=1}^{N} F(5.0667) + D(250) + G(C)$$

Where:

TCA = The total annual cost for the airlift segment

N = The number of point-to-point airlift requirements

F = The specified number of statute air miles between points

D = The number of directed landings

G = The number of gallons of fuel consumed

C = The appropriate cost per gallon of fuel

Figure 5.4 Total Annual Airlift Cost Model.

$$TCT = Fp + \sum_{i=1}^{N} Af$$

Where:

TCT = The total annual cost of the terminaling service

Fp = The negotiated fixed price contract award cost

Af = The quarterly determined award fee

N = The number of quarters in which an award fee was authorized

Figure 5.5 Total Annual Ground Terminal Cost Model.

An in-depth review of military and civilian positions at NAVMTO was accomplished by the author in order to determine which billets or positions are

required for the management of the QUICKTRANS system. There were approximately 278 people working at NAVMTO, 19 military and 259 civilians. An in-depth review of NAVMTO's mission and organization identifies those personnel who are directly related to the management of the QUICKTRANS sytem but could not be eliminated due to a consolidation of contracts.

NAVMTO's mission as stated in NAVMTOINST 5450.1F is "to perform transportation management functions of a operational and administrative nature as assigned and to administer the Navy Contract Cargo Airlift System (QUICKTRANS)". It lists twenty one functions (see Appendix E) in helping accomplish the above mission. Each of those functions are accomplished by personnel represented by the blocks in Figure 5.6. The special assistants for Internal Review, Equal Employment Opportunity, Mobile Navy Overseas Air Cargo Terminal (NOACT), and the Navy's Shipper Service Representative at the Military Traffic Management Command, Eastern or Western Area, (MTMCEA or MTMCWA) would not be affected by a change in the manner of contracting for QUICKTRANS service.

The Management Support Department had 20 personnel working in it. For the most part they are concerned with administrative requirements of the command. However, this department is also responsible for analyzing management data. This would require interfacing with the commercial company's management information system which, in the case of Emery, is the EMCON system. Although most of the management data could be provided by EMCON, it would still be the responsibility of NAVMTO to review it. No billets would be saved.

The Financial Services Department is broken down into four major divisions. They are carrier bills payment division, disbursement and collections division, audit and claims division, and NAVADS (Navy Automated Transportation Documentation System) Data Base Division. This department would be partially affected by the reduction of processing of payment of bills submitted by the various trucking firms in the CONTRUCK system. There are thousands of GBLs processed by the carrier bills division monthly. With Emery reducing the number related to the QUICKTRANS system, it is possible that two clerks could be eliminated.

The Movement Coodinating Department is the key department when discussing the operational activities of QUICKTRANS and the movement of freight. There were 62 personnel in this department, of which none would be eliminated if a commercial contractor like Emery was utilized. This department has many other responsibilities other than QUICKTRANS.

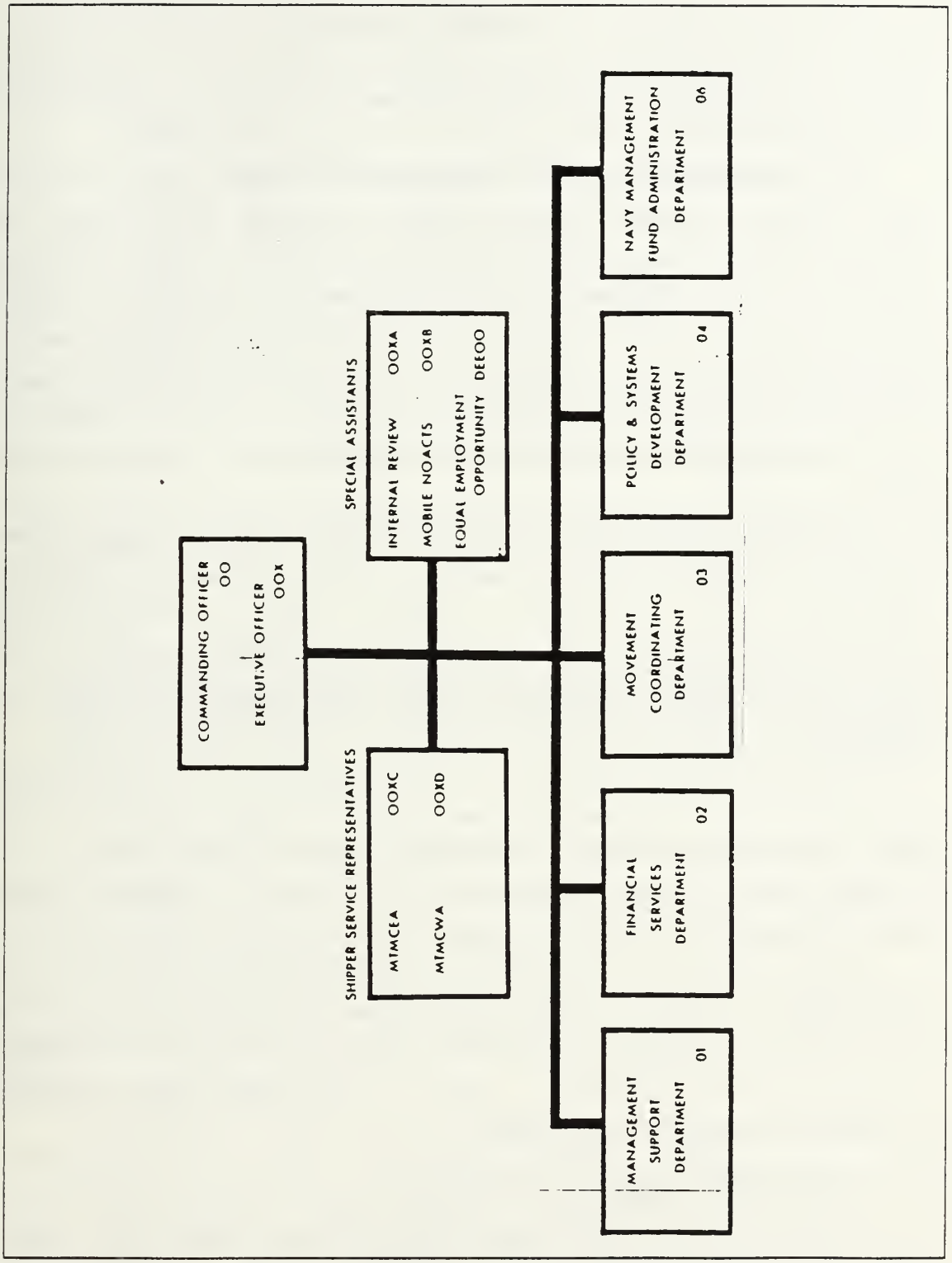


Figure 5.6 NAVMTO Command Structure.

The Policy and Systems Development Department is exactly what the title implies. It develops policies and systems to provide technical direction, guidance, and assistance on Navy material transportation matters. It evaluates the effectiveness of systems in place regardless of the structure, so no billets would be affected.

The Navy Management Fund Administration Department is similar to a very large comptroller's department with a variety of financial responsibilities. This department administers and accounts for the Transportation of Things (TOT) Navy subhead of the Navy Management Fund, and formulates and executes the command operations budget. They bill particular users according to the transportation account number (TAC) and also disburse funds to the two contractors: Southern Air Transport, Inc. and CFS Air Cargo, Inc. Of the 24 personnel in this department, it is feasible that one accounting clerk could be cut due to the implementation of a single contractor like Emery.

A Burroughs 4900 located at Naval Supply Center, Norfolk or smaller personal computers at NAVMTO itself are used for the Navy Automated Transportation Documentation System (NAVADS), the Hazardous Material Information System (HMIS), and the Navy Ordnance Transportation Tracking System (NOTTS). Each of these systems would still be required and no cost savings would be realized by having one contract.

Overhead costs that would be saved by the implementation of the Emery system are considered to be insignificant, thus the total cost of running the QUICKTRANS system would remain approximately $40 million. Although this chapter has not revised the Holden and Weber thesis's estimated cost of $39.3 million, it is apparent from the assumptions required to arrive at that number that it is overly optimistic at best, and at worst, impossible for one contractor to accomplish the same tasks as the QUICKTRANS system. To obtain a more accurate QUICKTRANS figure in the future, the mathematical cost model shown in Figure 5.7 could be used with different commercial proposals, showing a savings in the overall cost of operating QUICKTRANS and NAVMTO in general.

D. COMMERCIAL ACTIVITIES POLICY

A major misconception relied upon in the Holden and Weber thesis, as well as other related research documents, is that NAVMTO is not following the intent nor the letter of the law as set down by the Office of Management and Budget (OMB) Circular

$$TAC = TCL + TCA + TCT + OH$$

Where:

TAC = Total annual cost for the QUICKTRANS system

TCI = Total annual cost for the land-haul segment

TCA = Total annual cost for the airlift segment

TCT = Total annual cost for the airlift segment

OH = Annual overhead

Figure 5.7 Total QUICKTRANS Cost Model.

A-76 concerning governmental competition with private sector commercial activities. The following definition provides a basis for reviewing how well NAVMTO has complied:

> A commercial activity is one which is operated by a Federal executive agency and which provides a product or service which could be obtained from a commercial source. A commercial activity is not a government function. ... A commercial activity also may be part of an organization or a type of work that is separable from other functions or activities and is suitable for performance by contract. [Ref. 16]

When QUICKTRANS and LOGAIR were created in the fifties, DOD was not only acknowledging the fact that they had an insufficient in-house airlift capability, but that the function of moving cargo within the continental United States could be accomplished by commercial firms. Since their creation, contracts have been let to civilian firms year after year. Although there may be no one integrated contract to cover door-to-door service, the fact remains that commercial activities provide the services required by the Navy.

The dedicated trucks and various other feeder and distribution systems were never a government function. They were always service agreements with commercial trucking firms using either government bills of lading (GBLs) or commercial bills of lading (CBLs). Additionally, the ground terminal contractor has been an integral part of the QUICKTRANS system from the beginning. It has provided the central point or hub that has tied the airlift service to surface movement carriers.

VI. THE NAVY INTEGRATED TRANSPORTATION SYSTEM: THE FUTURE

The Navy Integrated Transportation System (NITS) is not an officially recognized concept, but the idea it represents is the successor to the QUICKTRANS system. Most users think the movement of high priority material from the material's origin to their doorstep as an integrated transportion system, and they frequently call it QUICKTRANS to be such a system. In reality, the system moving the customer's material CONTRUCK, NDTS, BALD, local drayage, or any number of unique transportation systems. As each of these systems have been added, the Navy gets that much closer to requiring integration in order to obtain one closely coordinated efficient system. Each one was created to handle unique requirements. They frequently interface with other systems yet are not reviewed, as a whole, to take advantage of scheduling or routing.

Looking into the future, there may by additional systems added covering a wide variety of Navy shippers' requirements. These additional changes can be categorized under the titles of environmental or technological changes. Under the category of environment, there are a host of related changes. Simply adding additional missions and changing existing requirements will alter the QUICKTRANS system. In another category are technological changes that may dramatically alter the system's performance.

A. ENVIRONMENTAL CHANGES

The environment in which the Navy's Integrated Transportation System exists is expanding and constantly changing. Requirements for new systems or improved methods to accomplish the same job are constantly generating new contracts or modifications to existing ones. The strategic homeporting plan and 600 ship Navy will place additional burdens on the entire transportation system. With Corpus Christi, Texas; Gulfport, Mississippi; Pensacola, Florida; and other southern cities receiving homeported ships, a Gulf Regional Integrated Transportation System (GRITS) will be needed to support them. It may be a totally dedicated truck service similar to NDTS and be tied into the QUICKTRANS system at a hub located at Pensacola, Florida or some other acceptable location. The homeporting of ships in Everett, Washington will

require another small subsystem linking it to Whidby Island, Bremerton, Bangor, Keyport, and McChord AFB; McChord functions as the mini-hub linking the subsystem to QUICKTRANS. There are existing systems linking the San Francisco area to the Long Beach and San Diego areas, but these systems require better coordination to effectively utilize connecting interfaces with transcontinental systems such as CONTRUCK or QUICKTRANS. With new additional homeporting locations for Navy ships, additional transportation systems will be added or old ones modified and improved.

Ensuring that arrivals and departures of the various interconnecting transportation modes and systems are integrated will become more important if an efficient system is to evolve. Local drayage agreements will have to be coordinated with NAVMTO to ensure an efficient, smooth-running system. Efficient door-to-door service can only be achieved if all subsystems are coordinated. At the present, they are not.

Other possible uses of the transportation system may be attempted. Placing parcel post on QUICKTRANS flights or trucks is feasible. Although the volume of parcel post is not known, it is estimated that tons could be flown in triwalls placed on existing QUICKTRANS flights. This service would be between major Naval bases. At most Naval activities, delivery of mail is accomplished with guard mail delivery. By placing parcel post in triwalls or mail bags within the central mail rooms, a daily sort by destination could be made. At the end of the day, a QUICKTRANS feeder truck could pick up the consolidated mail (COMAIL) and deliver it to awaiting QUICKTRANS flights. At the destination, the parcel post would be delivered to the central mail room for local distribution. There are potential savings to the taxpayer to be gained by this idea if no drawbacks are identified.

As a truly integrated transportation system, the option of loading military personnel's private vehicles into seavans for transfer overseas is a possibility, providing acceptance of the idea can be obtained from MTMC. The Military Sealift Command (MSC), in coordination with MTMC, does provide this service at the Port of Long Beach. However, since the QUICKTRANS ground terminal contractor already loads seavans at Travis AFB with lower priority cargo, he could easily take on the additional duty of loading cars. For example, the service member could drive to Travis AFB, drop off the vehicle, and await transportation at the same location. The contractor could take possesion of the vehicles, load them into seavans or other appropriate

container, and take the containers to the Port of Oakland for shipment on a ocean carrier to the final destination. Moving cargo across the continental United States might even be by rail if the containers were compatible with truck, rail, and ocean transportation modes. The Navy already has the first intermodal port in the DOD located at Travis AFB. The future may see additional ports with additional purposes created at other strategically located hubs such as Norfolk, Virginia or Dover, Delaware.

External to the current Navy transportation system is all the material coming from industry. In many cases this material comes to Navy activities in less than truckload (LTL) quantities from all over the United States. In order to reduce transportation charges, several key geographical areas may be identified as consolidation hubs. Navy contractors in that area would be directed to ship their material to a specific major common carrier for consolidation and transshipment to the final destination. This service would be similar to NAVCON and the Service Agent Material Expediter Western Services (SAMEWS) but would be closer to origination location of the material. Potential benefits include less cost and possible introduction of the material into a data base for tracking and inventory purposes.

The requirement for a Lockheed 100-30 aircraft places constraints on who can bid on the QUICKTRANS airlift contract. The aircraft requirement eliminates all but the current contractor. The only other company (Markair (AIA), located in Alaska with only 3 aircraft) that could possibly bid has insufficient planes to accomplish the job. Although the likelihood of dropping the requirement is low, the future may change this. One of the primary reasons QUICKTRANS is required to be compatible with the Air Force's cargo handling system is so that cargo can be efficiently and quickly transferred between civilian and military aircraft. This reasoning is faulty on several points. During current day-to-day operations, pallets are not directly transferred to military aircraft. And even if those aircraft were called upon to move cargo under wartime conditions, they would move the material to the final destination instead of a MAC terminal for transshipment. When the Civil Reserve Airlift Fleet (CRAF) is activated, the majority of commercial aircraft will be moving civilian containers until there is time to convert them to 463L compatible aircraft.

B. TECHNOLOGICAL CHANGES

Perhaps the single most important change to the transportation system will be the implementation of existing technology. Throughout the commercial world bar coding, electronic data interchange, automated transaction processing, and other innovative computer related technology are being used to increase productivity and efficiency.

There is a recognition for the need of timely, accurate data in real time computer systems, but the Navy is just beginning to apply it to their inventory/shipping/distribution systems. Without some form of automatic identification, it is no longer possible for all data to be fed into computers in a timely manner. It is for that reason that there are a plethora of indentification systems and equipment that can be used in tracking material.

The most common and well established identification system is the bar code. It is extremely common in civilian industry. There are several bar code schemes being used. The most common is Code 39, which includes the entire alphanumeric character set plus several special characters. It has been adopted as a standard by the Logistics Applications of Automated Marking and Reading Symbols (LOGMARS) Committee for use by the Department of Defense and the General Service Administration [Ref. 17: p. 20]. LOGMARS is an Army-managed initiative to increase productivity, reduce error rates, and improve the responsiveness of automated systems using bar code technology. The goal is to have everything shipped to and from DOD activities using bar code symbols in accordance with a military standard (MIL-STD-1189A). This includes requiring outside vendors to place bar code symbols on material destined for the military. The Navy is just beginning to explore the possibilities of using bar coding. For example, the Advanced Traceability and Control (ATAC) HUB in Norfolk, Virginia uses LOGMARS standards for bar codes to identify and track the movement of high value, sensitive Depot Level Repairables (DLRs) through a HUB warehouse which receives, identifies, sorts, and prepares material for shipment.

Different code sizes, different code densities, and different quantities of lines printed can be adapted for specific requirements. The overall size of the code is limited only by the type of printing and reading equipment being used. Hand held laser scanners (commonly refered to as wands) which are lightweight, non-contact portable code readers, provide great operating flexibility in reading codes. Some use a Radio Data Terminal (RDT) system to electronically transmit the information read off the

code to a host computer on a prescribed frequency through a computer interface unit. Other systems such as Radio Frequency (RF), Surface Acoustical Wave (SAW), magnetic vision, Optical Character Recognition (OCR), and voice recognition are possible alternatives for use in a shipping terminal or inventory warehouse.

The first step of completely automating the shipping function, from picking the material out of a storage bin to placing it in the hands of the customer, is already being done at selected supply centers. The Naval Integrated Storage, Tracking, and Retrieval System (NISTARS) is a completely automated warehouse. After inputting a request for a part, it is retrieved automatically. Inventory adjustments are made and reorders initiated as necessary. Although NISTARS is currently an inventory management tool, it could be used as the beginning of a much larger system including transportation and distribution. For example, after the part was retrieved from the bin, it would be taken to a machine for bar coding. The bar code would indicate the Transportation Control Number (TCN), information concerning destination, and any other required information. After the part was coded, it would be loaded on a Automated Guided Vehicle (AGV) and taken to an awaiting truck or rail carrier, or a temporary holding area for later shipment. Eventually, the shipments would be consolidated into full truckloads or trainloads ready for distribution. When the parts are moved through a terminal, a wand would be used to scan the code and update the location in the master computer. This type of scenario already exists in civilian industry. The Navy will eventually follow the civilian industry's lead in the area of material identification and control.

VII. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY

The Navy's transportation system, QUICKTRANS, was created out of a need for a dedicated airlift for high priority cargo. This need was recognized because the Air Force had insufficient assets to meet CONUS based requirements for movement of material in the 1950's. In response to this need, the Navy contracted with civilian industry for the required services.

The QUICKTRANS system consists of two contracts and the guaranteed traffic award service agreements with truckers. The ground terminal contract provides a multitude of services, including loading and unloading aircraft and trucks, a computer controlled information system, handling classified, hazardous, and other special handling cargo, consolidating freight, and loading seavans. The airlift services contract contains very detailed guidance on when, where, how, and what material is to be shipped. There are routing and time schedules to be followed using a specific aircraft, the Lockheed 100-30.

The author used a subjective evaluation of criteria to establish the QUICKTRANS overall effectiveness. In the six most important areas, QUICKTRANS was found to be highly effective and overall above average.

In analyzing the Holden and Weber thesis concerning the use of a commercial freight forwarder to replace QUICKTRANS, it was found to have several faults. The most significant one was that Emery would not be able to provide the ground transportation service similar to QUICKTRANS' dedicated truck service. Due to oversize and other special handling requirements of the Navy, Emery would not be able to carry some of the cargo using its normal operating procedures. As a result of the above faults, it was determined that the total estimated cost of using Emery would exceed the cost of the QUICKTRANS sytem, even when overhead was added to QUICKTRANS.

The Navy's transportation requirements are a constantly evolving phenomenon. With the Navy currently growing, it is expected that a more developed hub and spoke transportation system will be integrated into one system providing door-to-door service. Alternative uses of transportation assets may be identified, such as shipping

parcel post on QUICKTRANS flights or using the ground terminal contractor to prepare and load private vehicles for ocean transit. Technological innovations such as bar coding, or its many alternatives, may be used to increase productivity and efficiency.

B. CONCLUSIONS

The Navy is receiving many beneficial transportation related services for the money paid. The contracts encompass far more services than were initially intended when the QUICKTRANS system was created. By integrating the current QUICKTRANS system with the "new" subsytems (such as CONTRUCK, NDTS, and local drayage) a reborn time sensitive transportation system can be created.

Using 1983 information, it was determined that QUICKTRANS was the best alternative when compared to Emery due to the uncertainty of the services provided and cost charged. The current QUICKTRANS contract provides more services now than it did when it was initially reviewed in 1983. The potential for increased efficiency as a result of environmental and technological changes and innovations is great, but the Navy has yet to seize these initiatives and make them work.

C. RECOMMENDATIONS

Due to the broad review of the Navy's transportation system, a limited amount of detail was provided in some areas. It is recommended that the following topics be subject to further indepth study (or action to be taken) to implement the recommendation.

1) Review the requirement for use of Lockheed 100-30 aircraft and determine what the replacement aircraft will be for the 1990's, since many of the aircraft now in service will be beyond their expected useful life. Determine if the requirement for the 463L pallet can be cancelled when requesting airlift services for QUICKTRANS in order to increase competition.

2) Develop a formalized Navy Integrated Transportaion System identifying all the subsystems. Consider the benefit of publishing a yearly route schedule linking the various systems making up the spokes to the central hubs, and identify all key transportation officers for the benefit of the shipping customers.

3) Implement the use of bar coding or other computer aided identification coding in the Navy transportation system in order to to increase timely, accurate data for shipping and distribution purposes. Ensure there is an overall plan to replace the piecemeal systems currently being instituted into the Navy, and integrate them into one cohesive, system or design a specific system such as LOGMARS to replace them.

APPENDIX A

QUICKTRANS MANAGEMENT REPORTS

1) QUICKTRANS Monthly Management Report
2) Delay Analysis and Reliability Report
3) QUICKTRANS Segment Report
4) Origin Cargo Distribution Report
5) Transit Time Analysis
6) Consignee-Consignor Report
7) Commercial Movement Summary
8) QUICKTRANS Billing Tape
9) Hazardous and Security Cargo Report
10) Cargo Review Report

Source: Naval Regional Contracting Office, Contract No. N00600-84-C-3283

APPENDIX B

QUICKTRANS SCHEDULES AND ROUTE PATTERNS

Flight 152 (*Mon. to Fri.*)
Originate Travis AFB, CA
To NAS North Island, CA
To NAS Pensacola, FL
To NAS Jacksonville, FL
To Charleston AFB, SC
To NAS Norfolk, VA
To Dover AFB, DE

Flight 151 (*Tue. to Sat.*)
Originate Dover AFB, DE
To NAS Norfolk, VA
To Charleston AFB, SC
To NAS Jacksonville, FL
To NAS Pensacola, FL
To NAS North Island, CA
To Travis AFB, CA

Flight 124 (*Sun. and Sat*)
Originate Travis AFB, CA
To NAS North Island, CA
To Indianapolis, IN
To NAS Norfolk, VA
To Charleston, SC
To NAS Jacksonville, FL

Flight 624 (*Sun. and Sat.*)
Originate NAS Jacksonville, FL
To Charleston AFB, SC
To NAS Norfolk, VA
To Dover AFB, DE

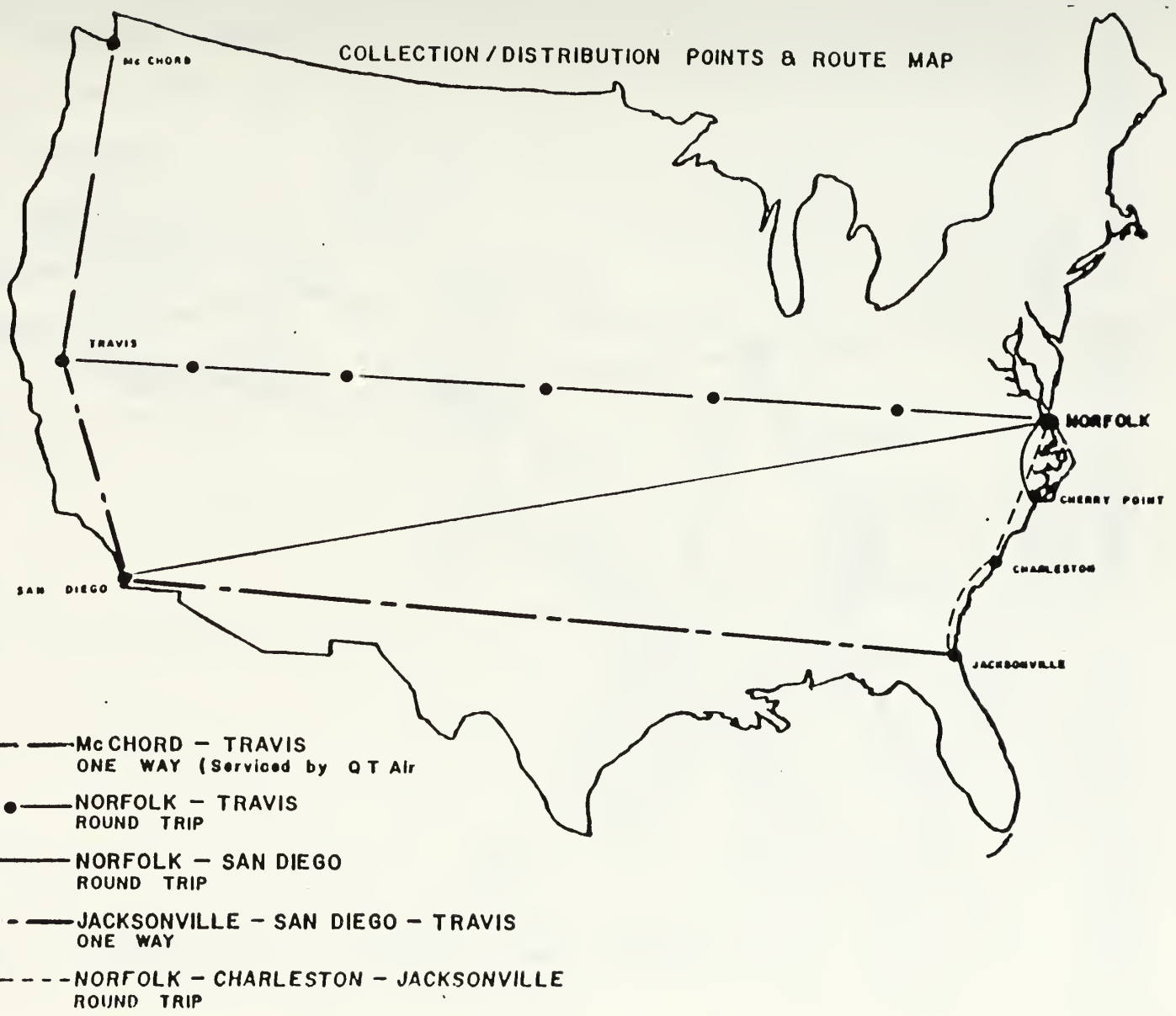
Flight 123 (*Sun. and Mon.*)
Originate Dover AFB, DE
To NAS Norfolk, VA
To Indianapolis, IN
To NAS North Island, CA
To Travis AFB, CA

Flight 116 (*Thurs.*)
Originate Travis AFB, CA
To Indianapolis, IN
To NAS Norfolk,VA

Flight 115 (*Thurs.*)
Originate NAS Norfolk, VA
To Indianapolis, VA
To Travis AFB, CA

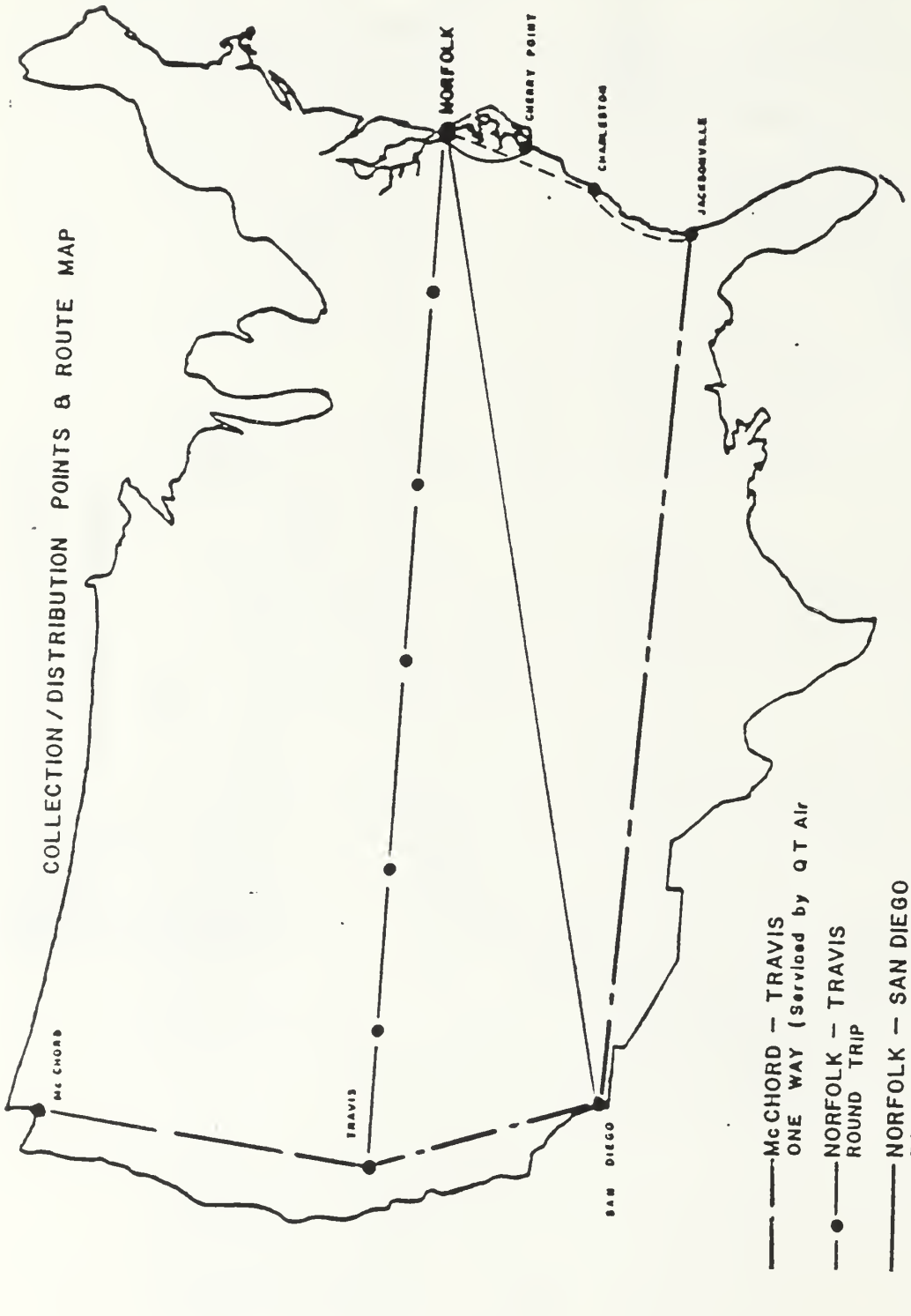
Flight 222 (*Sun. and Sat.*)
Originate Travis AFB, CA
To McChord AFB, WA
To Travis AFB, CA

Flight 232 (*Weds., Thurs., and Fri.*)
Originate Travis AFB, CA
To MCChord AFB, WA
To Travis AFB, CA

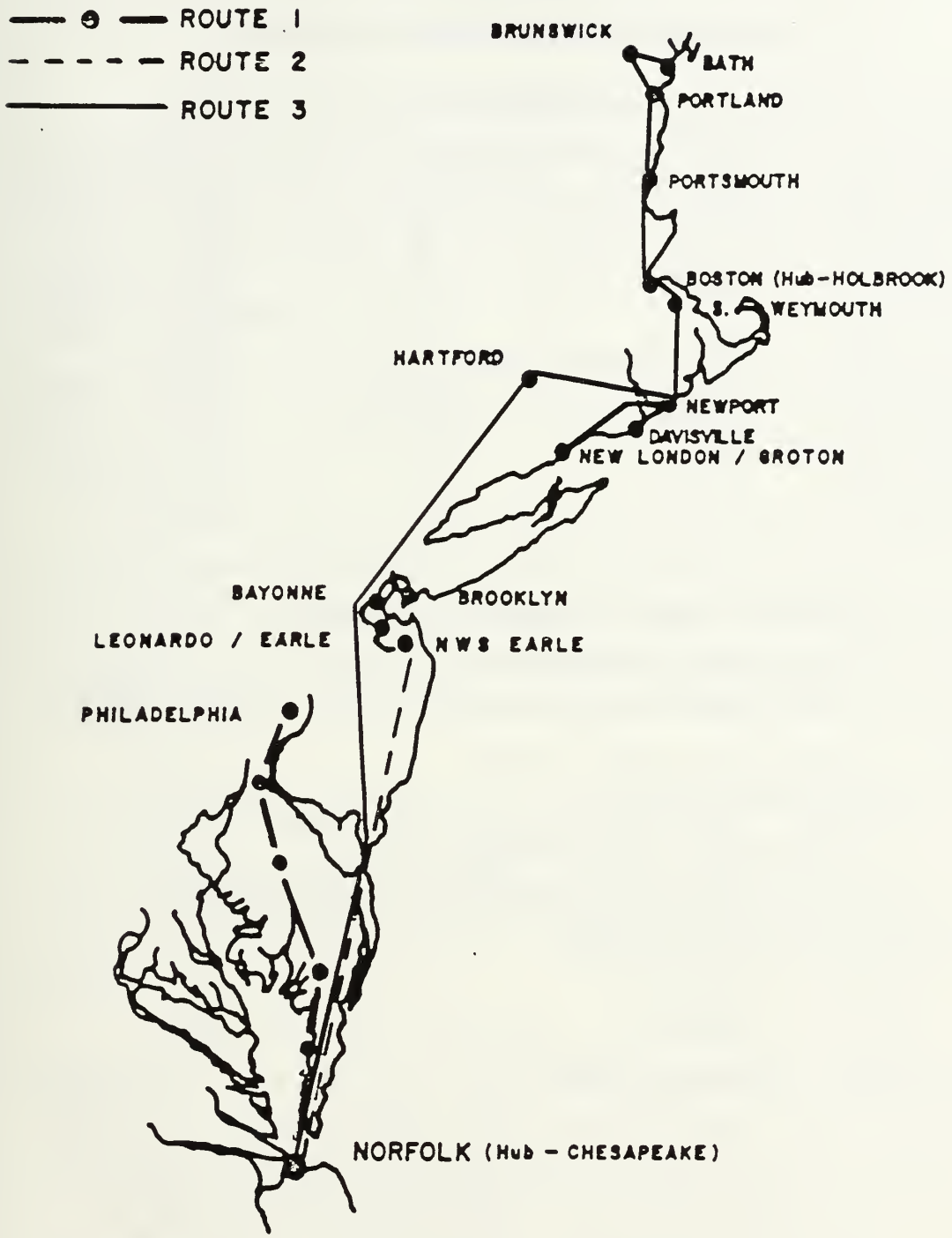

COLLECTION / DISTRIBUTION POINTS & ROUTE MAP
Mc CHORD
TRAVIS
NORFOLK
CHERRY POINT
CHARLESTON
SAN DIEGO
JACKSONVILLE
Mc CHORD – TRAVIS
ONE WAY (Serviced by Q T Air
NORFOLK – TRAVIS
ROUND TRIP
NORFOLK – SAN DIEGO
ROUND TRIP
JACKSONVILLE – SAN DIEGO – TRAVIS
ONE WAY
NORFOLK – CHARLESTON – JACKSONVILLE
ROUND TRIP

APPENDIX C

CONTRUCK AND NDTS ROUTE PATTERNS



NORTHEAST DEDICATED TRUCK SYSTEM



APPENDIX D

NAVMTO OVERSIZE MATERIAL STUDY

Pallet Train Statistics

Flight Segments	*Positions Used*	*No. of Flights*	*%T*	*%U*
NGU--IND	408	64	39.8	45.5
IND--NZY	341	54	39.5	45.1
NZY--SUU	269	60	28.2	32.0
SUU--TCM	264	42	39.3	44.9
NGU--CHS	419	59	44.4	50.7
CHS--NIP	332	58	35.8	40.9
DOV--NGU	202	58	21.8	24.9
IND--SUU	61	10	38.1	43.6

% Total used in trains = 2296/(405X16) = 35.43%

% Usable in trains = 2296/(405X14) = 40.49%

% of Flight Segments with pallet marriage = (405 - 42)/405 = 89.6%

Notes: (a) Positions used in trains = 2296

(b) Flight Segments = 405

(c) Flight segments with no marriages = 42

(d) There are 16 Half Pallet Positions in the L-100, but only 14 can be used for pallet trains.

(e) %T = 16 positions

(f) %U = 14 positions

Source: 1980 NAVMTO in-house study

APPENDIX E

NAVMTO FUNCTIONS

1. Authorize the movement of Navy material by air, including the arrangement for Special Assignment Airlift Mission: challenge the validity of airlift requirements in accordance with NAVSUP directives; divert material to lower cost modes, as necessary, to control the expenditure of Navy transportation funds and effect reduced transportation and related costs at all Navy shipping activities or other agencies shipping Navy material.

2. Implement policies and develop operating procedures for the QUICKTRANS System and serve as the QUICKTRANS System Manager/Contract Administrator. Provide or arrange for terminal support for QUICKTRANS aircraft and other aircraft transporting Navy cargo.

3. Maintain fleet locator information and provide appropriate information to shippers of material destined for Navy ships and mobile units. Arrange for collection, receipt, inspection, acceptance, monitoring, marking, consolidation, delivery, and documentation of Navy points when not otherwise provided for. Provide tracing and expediting service for shipments moving within the Military Airlift Command and QUICKTRANS.

4. Manage Type II Household Goods Containers to include inventory control, procurement, rehabilitation, and repositioning of containers.

5. Provide Technical direction, guidance, and assistance in material transportation matters to Navy commands, bureaus, offices, project managers, and shipping and transshipping activities, worldwide; conduct training programs as required.

6. Develop and issue instructions and procedures on Navy material transportation matters; review movement plans, instructions, and/or procedures originated by commands, bureaus, offices, inventory control points, and purchasing activities when material movement practices and/or costs are significantly affected.

7. Provide management and direction to area mobile transportation coordinators; evaluate the effectiveness of existing traffic management and documentation applicable to the movement of Navy material distribution applicable to the movement of Navy material; make recommendations for corrective action and take appropriate action

when so directed. Analyze and evaluate Navy Material distribution and procurement practices to ensure transportation economy and consideration of transportation factors.

8. Serve as Navy shipper service office and liaison for the area or field commands of MTMC, MSC, and MAC. Provide direction to assigned liaison officers or personnel serving at those activities. Provide and direct the activities of resident transportation representatives assigned to major commands or offices and representatives.

9. Provide program guidance on the technical aspects of shipment planning, transportation, and movement documentation, Navy Transportation Account Code application, and carrier/contractor quality of service analysis and control.

10. Administer the Navy Management Fund, Transportation of Things Navy account including all accounting, billing, and reporting, as directed by the Chief of Naval Operations, and provide Navy Management Fund participating commands, bureaus, and offices with obligation data and budget formulation assistance as defined by the Comptroller of the Navy.

11. Administer a data collection system to identify appropriate elements of transportation usage and cost. Serve as the central office to accumulate cost information on transportation usage; develop forecasts of Navy requirements for the Transportation Single Managers for the five year Defense Plan and unplanned military operations; and provide necessary data elements to systems commands, fleet commands, and inventory managers to facilitate submission of planning data and budget projections.

12. Develop and maintain a library of tariffs, quotations, schedules, routes, and a library of functional publications in the transportation/distribution management field.

13. Maintain a contingent of assigned military personnel in a state of immediate readiness to operate as a mobile Navy Overseas Air Cargo Terminal team with fleet units in any remote location, as directed.

14. Serve as the Naval Supply Systems Commmand (NAVSUP) field activity for transportation, exercising full authority and responsibility of NAVSUP in the execution of functions assigned. Represent NAVSUP on joint and Navy working panels, committees, boards, review teams, and inspection parties.

15. Execute the Naval Supply Systems command First and Second Destination Transportation budget plan for Transportation of Things Navy and Terminal Services, which includes a complete audit function to ensure validity of charges, accumulation of monthly expenditures, and statistical analysis. Submit reports to NAVSUP.

16. Pay all public vouchers covering Government and Commercial Bills of Lading for shipments within continental U. S. and for combined inland water and ocean movement.

17. Perform entitlement audits on shipment of household goods and collect any excess costs.

18. Establish value and liability of Navy material lost or damaged in transit; collect from carrier or insurer, if applicable.

19. Receive and pay commercial bills for shipment of household goods in connection with the Do-It-Yourself Program; perform an entitlement audit and determine the monetary allowance to Navy members; issue W-2 Forms for such moves.

20. Serve as chief technical advisor in administration and development of Navy Ordnance Transportation Tracking System (NOTTS); monitor, track, and expedite for NOTTS.

21. Perform other duties as assigned by the Commander, Naval Supply Systems Command.

Source: NAVMTOINST 5450.1F

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